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COMMITTEE REPORTS FROM THE CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES

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OBSERVATIONS ON PUBLIC HEALTH IN THE ORIENT*

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INDIA

IN comparison with India, the solution of the health problems in these other countries I have mentioned, difficult though it may be, is mere child's play. India's population is greater than the total population of all Oriental countries excluding China. It is not merely greater than the combined populations of the United Kingdom, the many British overseas dominions, including Canada and Australia, and the British protectorates, but greater than all these by 67 million people.

United Kingdom	47,263,500
Rest of British Empire not including India	132,545,123
Total	179,808,623
British India	247,083,473

These figures from the 1921 census do not include the more than 71 million in the Native States whose welfare cannot be considered as a matter apart from British India. Maps of the world on Mercator's projection are deceptive in that they show India to be a relatively small place whereas it is decidedly vast. In both area and population India is larger than all of Europe excluding Russia.

Merely from the standpoint of area and population the public-health problem of India is an enormous one. But when to these two factors you take into consideration the perplexing cross currents of politics, religion, social customs and education, as must be done in order to get a picture of the problem in its natural setting, you have something before you which staggers the imagination. I now believe that not even China presents a more baffling problem.

Our party arrived in India (Burma) December 12th and I sailed from Negapotam on January 22nd. Plans for the visit of Sir Claude Hill and party had been in the making since March 1922. The government and the Indian Red Cross placed a special touring railway car at his disposal. We traveled more than 4,000 miles by rail. Conferences were held in Burma, Bengal, United Provinces, Punjab, the Madras Presidency and the Bombay Presidency. To get to these places we had to pass through Bihar, Rajputana, Central India, the Central Provinces and Hyderabad. The one purpose of the visit was to discuss with the Indian Red Cross the question of its peace time program. The leaders of the Indian Red Cross are to a large extent government officials. The organization is very strong financially. When we arrived at provincial centers we had interviews with key people, conferences with whole groups, more interviews and

* The first half of this interesting paper by Dr. Peter appeared in the July issue of this JOURNAL.—*Editor.*

perhaps a few public meetings when there was time. The conferences and interviews were of the greater value for getting information and included meetings with the Viceroy, Governors of provinces and presidencies, heads of departments of the Government, leaders of social service and other movements, politicians, (even some who had been in prison), business men, doctors and nurses. No one could have wished for more open doors. Yet in spite of all these opportunities I hesitate venturing into a discussion of India lest unintentionally I overstep the bounds justified by what was after all a limited period for observation. I am sure you will sense the feeling of awe I experienced in coming into rapid contact with various aspects of such a big phenomenon and my dismay when the many ramifications I encountered continually led off into fields of religion, caste, economics and what not of which I was hopelessly ignorant. All I could do was to stumble along trying to follow the particular person I was meeting at the moment, asking innumerable questions, often looking helplessly blank until a point had been explained to me a second time, and as a last resort being handed a pile of printed reports and documents which kept me fully occupied all of my spare time at sea.

The British came to India first as traders and then as rulers. This is not the time or place to dwell upon the history of how or why the many and often warring governments in India were superseded by one foreign rule which has become increasingly strong and stable since the days of the mutiny of 1857. Nor am I here to attempt a dissertation on the political situation in India as I saw it. To one coming from China and its own special brands of politics it was interesting to say the least to notice the workings of an entirely different sort. Political considerations cannot be dismissed as of no importance even in a discussion of India's public-health problems for the subject always lay close to the surface of the minds of those whom we met. Politics and finance were the two big questions. As you know India has been in the throes of a more or less violent political agitation for several years. And for the last few years government expenditures have exceeded the revenue. These two things have had a direct bearing upon public-health work, but I shall not dwell on them but try to mention some of the facts regarding health conditions which impressed me.

India has a very large public-health machine which is operated largely by the members of the Indian Medical Service. Each of the important provinces or presidencies has a public-health department with a trained public-health man in charge. He has under his charge the district health officers who may number as many as thirty, depending upon the size of the province. The organization extends further down to the 'local officers' or registrars in the municipalities who are supposed to report births, deaths and the presence of certain diseases. The work of the various provincial departments is coördinated in the office of the Public Health Commissioner with the Government of India. In every province one finds hospitals, dispensaries, and in the larger ones bacteriological laboratories, research institutes, Pasteur institutes, medical schools; in Calcutta a flourishing school of tropical medicine and hygiene,—and many other component parts only a few of which I saw in an intimate way. But I saw enough to be deeply impressed with the size of what in China would be considered an army of health workers, with the great variety of work being done and the amount of money that was being spent in keeping with the undertaking. It is a health machine which it has taken many years to build. Some of the great medical discoveries of the times have been made by men in that service. I noted the feeling of pride men took in that organization, and even if you were to see no more than I saw you would agree that on the whole it was a very fine public-health

machine, perhaps the finest to be found anywhere in the orient.

And yet I was surprised and disappointed. I expected to be confronted by a great contrast between what I had been accustomed to see in China and what I saw in India. I expected there would be a great difference because of this health conserving machine which had so laboriously been built up over a period of fifty years. Undoubtedly this difference in the lives of the people does exist, but not in the degree I expected.

I had read much concerning India before I visited the country; not much on the subject of public health because there is not the same amount available, but general reading. I knew that India had been in contact in a more intimate way with modern western thought than any other Oriental country from the mere fact that political penetration implied this. From the first, schools teaching modern subjects had been founded until now they are to be seen in every part of the country. Roads had been built to the extent of 207,338 miles and railroads totaling 37,029 miles. The latter carried 559,246,100 passengers in 1920 and there was a network of telegraph and postal lines extending throughout the country. There were 1,491 newspapers in 28 languages. Surely with all of these modern facilities for intercommunication there was no lack of medium for the rapid and thorough dissemination of new ideas including ideas of modern methods of health conservation. Great projects of irrigation had been completed. Agricultural bureaus were providing the farmers with better seeds and advanced methods of harvesting better crops. Mines were being opened, forests were being supervised. Famines were being fought by the importation of foods from other more prosperous regions. There were no great wars to decimate the people. For years they were allowed to live in a state of peace. Surely after more than fifty years of living under conditions such as these, the people would be modernized to a considerable extent.

And when it came to epidemics, here was a national health machine equipped with special investigators and with remedies to point the way to suppression of the disaster. Take the case of smallpox. In two years (ending 1921) as many as 15,393,610 primary and 6,101,062 revaccinations were performed. As to plague a defense was built up which covered every plague center. In Bombay in 1920, as many as 693,078 rats were caught and examined; 1,468,729 doses of anti-plague vaccine were made in the bacteriological laboratory. Experimental and research work on plague was carried on. About $85,000 was spent in extensive deratization and one million rats were killed. Regarding cholera, municipalities were allowed to spend as much as twenty, thirty and even forty per cent of their income each year to ensure a safe water supply. In the laboratories cholera vaccine was manufactured in great quantities. Several large funds were started by prominent officials or their wives to ameliorate human suffering. Usually these took on the form of child welfare or maternity work. Schools for training midwives and nurses were opened. . . . Am I succeeding in giving you something of a picture of what was being done for the people of India by this great health machine?

And yet, after all has been enumerated, and I have not mentioned all by any means, what do we find? Lest I be accused of exaggeration, let me confine myself for a few minutes to official reports.

It is a trite saying that a nation may be judged by the care given its mothers and children. Let me quote from the 1920 Annual Report of the Public Health Commissioner with the Government of India (page 60):

MIDWIFERY IN INDIA

"The vast majority of women in India are attended in their confinement by indigenous midwives known as 'dhais.' The profession of dhai is hereditary, passing from mother to daughter. Their midwifery practice follows

custom and tradition which unfortunately are not based on real training or knowledge. The experience of many disastrous happenings does not appear to teach these women anything. They are ignorant of the natural course of labor and their one aim in practice is to accelerate delivery quite regardless of the actual state to which labor has advanced.

"'Dhais' are of the lowest caste and of uncleanly habits. Clothed in voluminous dirty garments their arms are decorated with innumerable glass bangles; their fingers, covered with shoddy rings, end in dirty finger nails. Their apparatus consists chiefly of a large tobacco pipe of the 'hookah' variety, a dirty old knife and a small oil lamp the oil of which serves indiscriminately both for burning or oiling the hands for vaginal examination. A few scraps of rag or old wool pulled out of a mattress and some string completes the outfit.

"Religion and custom deems the child-bearing woman unclean. She is therefore relegated either to an outhouse or some dark and dirty chamber for the whole maternity period. None of her family will assist her and the 'dhais' duties include not only the nursing of the mother and babe but also cleaning of the chamber.

"Labor is never left alone; frequent vaginal examinations with dirty hands, early rupture of the membranes before the os uteri is half dilated, and forcible pressure of the abdomen in the absence of pains, is the routine.

"Immediately the child is born the placenta is attacked. The unfortunate mother is often given an emetic. If the vomiting fails to expel the placenta it is removed by pulling on the cord or piecemeal by hand. The vagina is then packed with oiled wool. The placenta is buried at the head of the patient's bed in a shallow hole. In a small room with India's climate the resulting stench after a few days may be imagined.

"The child is maltreated even worse than the mother. The cord is cut with anything handy and the most common thing to use for ligature is the hair-string from the mother's head, a greasy cord which she has worn for months. The usual tongue-tie operation is then performed. The most amazing thing is that the child is allowed no nourishment for three days, but is kept quiet with opium. As may be imagined, this leads to marasmus in the child and great discomfort to the nursing mother.

"If labor is complicated by abnormal presentation or other accidents the dhai is completely helpless and unless rescued by someone with a knowledge of midwifery practice both mother and child commonly die.

"The largest city in India is Calcutta, with a population of 1,263,292 people. Three maternity centers are in operation and have reached the point in staff and confidence of the prospective mothers that in 1920 one of eight babies born in Calcutta were delivered by municipal trained midwives. Bombay, the only other city in India with a population of over a million, has almost reached this ratio."

There are some very illuminating statements in this report on the subject of infant mortality, and these can readily be understood in the light of the picture just given:

"The proportion of poor persons among the Parsis (the report is from Bombay) is comparatively small and the standard of education among them being high, it may be assumed that the bulk of the Parsi infants are registered at birth and yet their infantile mortality amounted to 199 deaths per 1,000 births.

"Since this rate prevails among the better classes in Bombay the fact has got to be faced that for the city as a whole, including as it does an unduly large proportion of the very poorest classes, the infantile mortality cannot, after every allowance has been made for various sources of fallacy, be fairly estimated at less than 500, which means that of every two infants born, one has to die before reaching the age of twelve months. The highest infantile death-rate, 995.6, was registered in Market section. This means that five out of one thousand survive the first year."

BIRTHS AND DEATHS

No one in India claims that the vital statistics returns are 100 per cent complete. But such care is exercised over a large area that the reports may be examined with some degree of confidence. The births actually registered in 1920 numbered 7,864,232, a rate of 32.98 per 1,000 population. This rate has not recovered from the effects of the heavy influenza epidemic of 1918 which caused a mortality of 7,000,000 lives. The quinquennial birth rate averaged 35.97.

The registered deaths in British India numbered 7,355,654 in 1920 or a death rate of 30.84 against a quinquennial mean of 38.02. The explanation for the low death rate in 1920 is the absence of devastating epidemics. It is interesting to note that while greater health conservation facilities exist in the cities, the natural tendency toward overcrowding and other habits result in the urban death rate being higher than the rural except in Bengal and three minor provinces, the difference being 34.64 urban against 30.51 rural.

COMMUNICABLE DISEASES

If in Shanghai we were to experience recurring smallpox epidemics which caused as many as 3,536 deaths in one

year, the city would be up in arms. Bombay had this number of deaths in 1920, while Madras, a much smaller city, prided itself on having only 13,697 deaths in 1920 as against 41,732 the year before. Because of what I shall have to say later, I want to dwell on this subject a little more. What I have stated regarding Bombay and Madras is not exceptional. Going down the list in the report from which I quoted I find that this disease is fairly widespread:

"*Punjab.*—Smallpox was widespread in the spring months, attaining its maximum in May. Total deaths, 9,319.

"*Assam.*—Total deaths 1,700, 66 per cent being in a country district, which explains why the rural death rate was higher than the urban.

"*Burma.*—The disease was widespread. Deaths, rural 1,774, urban 1,079.

"*United Provinces.*—Total deaths 6,354, which is above the quinquennial mean.

"*Bihar and Orissa.*—Smallpox was the only disease which showed an increase over the previous year. The sanitary commissioner notes that for the past two years increasing opposition to vaccination has been met with which is partly due to political agitation. Agitators in some places have adopted the rôle of anti-vaccinators.

"*Northwest Frontier Province.*—Total deaths 2,051. The chief medical officer states that there is reason to believe that these figures are below the number which should have been recorded.

"*Central Provinces.*—Deaths 2,176. The disease, though not in violent epidemic form, was prevalent in every district throughout the year. The sanitary commissioner states that vaccination work has been much dislocated by the activities of non-coöperators who teach the people to refuse vaccination and to harass the staff by refusal of supplies and lodging."

In all of the registration area smallpox took a toll of 101,329 lives. I think the subject of smallpox offers one of the best illustrations of what can happen to an excellent health machine when politics is injected into its operation. This is the one disease that offers no economic obstacles to its eradication. So far as I can judge even the spiritualized imagination of the Indian can find nothing wrong about vaccination. I was shown a poster on smallpox and vaccination on which were enumerated five points to remember. One of these points was that it was all right to use because the vaccine came from the cow. This point was for the special benefit of those who held the cow sacred. There is enough machinery in India to wipe out smallpox and make it a rare and only sporadic disease, but in spite of all the facilities which exist it has not been wiped out. The difficulty of the problem does not lie in the nature of the disease but in human nature.

Fevers caused 4,931,202 deaths, or 67 per cent, of the 7,355,654 deaths registered in British India in 1920. Under this classification are included malaria, enteric, measles, relapsing, kala-azar and other fevers. Of these fevers malaria occupied first importance, causing 34 per cent of all deaths from fever, or 13 per cent of deaths from all causes. Here we are dealing with a disease whose eradication is quite as simple as that of smallpox. All that has to be done is to saturate cases of malaria with quinine and in the meantime eliminate the mosquito. Theoretically it is just as easy as that, but practically it is just as difficult as it is simple theoretically. At the present stage of India's development malaria is impossible of eradication. She will have to carry this load of disease for perhaps many years.

Let me cite an instance showing how difficult it is to control. The average strength of the British army in India for 1920 was 57,332 men. During the year there were 61,429 admissions to the hospitals. Three hundred and eighty-five died and 2,314 were invalided home. On an average, 3,488 men were constantly sick. There were 1,071 hospital admissions for every 1,000 men. Out of every thousand, 7 died, 40 were sent home, and 61 were constantly sick. Each man averaged 20 days of sickness during the year.

In an army it is generally assumed that venereal diseases cause more incapacitation and have a higher incidence than any other group. Of the 1,071 hospital admissions per 1,000 men in this instance, 118.2 were due to venereal origin while 176.6 were due to malaria. Malaria thus accounts for 16.5 per cent of the total hospital admissions and also for 6.2

per cent of all deaths. In Bombay one finds that 33 per cent of all hospital admissions are due to malaria.

The army consists of a special age group composed of selected men. They live in quarters which are built to order. They are foreigners who are taught how to take ordinary precautions. Quinine is always available for them; yet there is this high incidence. In the whole army there were but 24 cases of smallpox and four deaths, and only two admissions and no deaths from cholera. In the Indian army, with an average strength of 216,445, there were 44,709 admissions from malaria or 206 per 1,000. Here the problem is more difficult than with foreign troops, but still not so difficult as in the case of the general population.

In criticizing the report for the year 1919 the reviewer of an English scientific journal jeers at the slow progress shown in the application of scientific knowledge to the problems of disease, especially as regards malaria. He generously stated that at no time has India possessed so many able investigators in epidemiology, but he demanded proof of practical advance in hygiene as shown by morbidity limitation and mortality reduction. To this criticism the Public Health Commissioner with the government of India replied in his 1920 report (page 84):

"The writer can have little idea of the vastness of the problem involved. The practical application of scientific knowledge in the prevention of infectious diseases is entirely a matter of money. (In this I do not fully agree for it seems to me, as I shall point out later, that something more than money is involved. W. W. P.) India is a poor country and to free the continent of malaria would need the expenditure of an amount of money comparable to India's contribution to the cost of the Great War and a concentration of effort equal to that required to defeat the German armies.

"We are not alone in failing to apply our knowledge of the epidemiology of malaria. In the sanitary report of the Dutch East Indies for 1920 the author says: 'Let those who repeatedly reproach the government of the Dutch Indies with failure to combat the malaria which so prevails among the population of Java imagine what is necessary to deliver from malaria a population of 44,000,000 people living scattered over an area of 35,000 square miles in a rainy country. It should be borne in mind that this population, on account of its poverty and low standard of general education, can neither be persuaded nor forced to coöperate in anti-malarial measures. In the past, impelled by the persistent cries of those who urge "For God's sake, do something," extensive schemes of jungle clearing and draining have been pushed on at the cost of much labor and money with no other result than that malaria has spread afresh with unabated violence. For the future we must avoid being forced by popular pressure into adopting measures based on insufficient data and limited in scope.'

"The above quoted extract might well have been written about India."

One more statement before we finish with the subject of malaria. The price of quinine in former years was not high and the government of India facilitated its sale through post offices in addition to the usual hospital and dispensary channels. But in seven years the cost rose from R17 (Mex. $11) per pound to R55 (Mex. $37) per pound and thus one of the main planks of the malaria platform was weakened and made more inaccessible.

During 1920, 130,140 deaths from cholera were registered in the British provinces. Not a single province was free from the disease, and 1920 was not an epidemic year, just an ordinary one. In the two provinces of Bengal (876,207) and Madras (609,306), as many as 1,485,513 deaths from this disease were registered from 1911 to 1920, ten years.

Regarding cholera the Public Health Commissioner says:

"How many times, in these reports on cholera, has the sinister influence of the great religious fairs and festivals been insisted upon. Happily in the year under review no great epidemic arose, but as I write we have figures for the current year already to hand sufficient to show that yet again is an appalling mortality of half a million to be expected in 1921. I trust that this matter will engage the attention of the newly elected Indian legislators.

"Even the provision of the best sanitary conditions and pure water supplies would not entirely suffice. The religious tenets and observances of the devout Hindus include bathing in and drinking the waters of certain rivers, streams and tanks" (that is, impounded water reservoirs). "Possibly in the early dawn of Hindu religious observances the places set apart for ceremonial ablution and drinking were the purest waters available. In

early India no doubt the wide river Ganges was a far better drinking water supply than the water of wells and ponds. Even now it has marvelous powers of self-purification, but the growth of the big towns along its banks, the pollution by crowded city populations and trade effluents have ruined its purity.

"Hindu religious observances have not moved with the altered conditions. The provision of a pure water supply to Calcutta may prevent severe epidemics, yet a noticeable preponderance of cholera in that city falls on the Hindus; a fact easily to be understood when one watches a bathing ghat in the early morning."

Let any who think it should be an easy matter to change religious customs to meet the requirements of modern hygiene recall the fight which is still raging around the communistic salivary exchange communion cup. Many a religion, directly or indirectly, may unconsciously assist its devout adherents to an early testing out of whatever future states of happiness its tenets may hold out.

In drawing all of this discussion to a conclusion let me pass into regions where the ice is thin and the waters are deep. The present state of health conditions in India I would attribute chiefly to four causes: politics, poverty, ignorance and religion, with what seems to me the most important last.

I have quoted from reports showing where politics interfered with carrying on public-health work. Non-coöperation has caused some queer ideas to become bedfellows. A non-coöperator will refuse vaccination because it is British. He will ride on a train and use the telegraph and postal systems in spite of their being British. I met some of these men. To one of them I said, "I cannot understand why you want to force out the British boycott, the public-health men who advocate vaccination for example. If you were wise, you would strengthen your hand by making the fullest use of existing facilities for protecting the health of the people. Why not keep right on taking the medicine out of the spoon even up to the moment you grab spoon and bottle away from them—if that's what you are after, to be your own political doctor or at least consultant. India should keep on taking her health medicine. The British won't put poison in the spoon. They haven't the imagination!" But all I received was a weary shake of the head, indicating that I did not understand. In the meantime the total number of vaccinations fell 11.5 per cent, that is, from 10,870,446 to 9,624,235 in one year. The decrease was general through all the provinces and the chief explanation seems to be the political reason mentioned.

CHIEF CAUSES OF MORTALITY IN BRITISH INDIA

Cause	1919		1920	
	Deaths	Rate per thousand	Deaths	Rate per thousand
Smallpox	136,077	.57	101,329	.43
Cholera	578,426	2.43	130,140	.55
Dysentery and Diarrhea	291,643	1.22	218,734	.92
Plague	74,284	.31	99,368	.42
Respiratory Disease	350,133	1.47	333,669	1.40
Fevers	5,468,181	22.93	4,931,202	20.68
All other causes	1,655,434	6.94	1,541,212	6.46
Total	8,554,178	35.87	7,355,654	30.86

Poverty is a real obstacle as we all know. It is often said that fifty million people in India never get all they want to eat. Poverty in India has many roots; continually impoverishing the soil by burning the needed manure, early marriage and too many children—a host of causes, many of which are not without a direct bearing upon public health.

I wonder if I may speak frankly about the religious side of the health question without being misunderstood. The atmosphere of India, social, educational,

political, is surcharged with it. I found more of it to the square inch than in any country I ever visited and of a more pronouncedly disagreeable type. The Hindu and Mohammedan are both so devout that they would like to kill each other, and this often happens, because their devotion conflicts. The Hindu holds that the cow is sacred and in consequence never kills the animal and endures all sorts of nuisances. The Mohammedan holds that the cow is good eating, kills cow sometimes in front of a Hindu temple and smacks his lips as he eats.

One of the chief dangers of the Hindu religion to public health is the belief that there exist 8,400,000 animal species through which the soul of man may pass. One of them is the rat which is the attendant of Ganesh, the god of luck and success. The killing of rats by public-health men trying to combat plague has led to riots. No matter how small the insect, it is not to be killed lest it be in the sacred list of the 8,400,000. This has led to some strange customs. Certain religionists will not eat their food in a dark place lest by accident he eat a fly or other insect and thus disturb the wellbeing of some soul in transition. Others will not walk out at night lest by accident he step on his grandmother's sister's present abode. The depredations of flies, mosquitoes and fleas are endured as being in the proper order of things. I confess to a certain degree of satisfaction on seeing a high caste Brahmin scratching himself surreptitiously. It is called for by religion that dirty water shall be used for bathing and drinking. Thereby the soul is elevated and the body is laid low. At every turn the public-health man is blocked by religion and custom, and no outsider can tell where the one leaves off and the other begins. Caste may be considered as a social custom but it had its origin in religion when the Brahmins claimed that they were better than ordinary folks. Turn whichever way he will, the aspirations of the public-health man are ground to dust in the mill-wheels of religion. If he dares so much as to whisper against prevailing practices, the backs of the people are raised at once because he is interfering with religious freedom. It is small consolation to him to fall back on the fatalistic remark made in a smallpox epidemic when Christian Scientists refused vaccination: "The All Good will help solve the problem by taking some of them away by the smallpox route." During my whole visit through India I did not witness a single explosion by the public-health men. They manifested the patience of Job.

Religion kills more people in India today than the British public-health machine could save if it were trebled in size. I am not dwelling unnecessarily on a subject which concerns only a small fraction of the population. The census of 1911 gave the following religious statistics:

Hindus	217,586,892
Mohammedans	66,647,299
Buddhists	10,721,453
Christians	3,876,203
Sikhs	3,014,466
Jains	1,248,182
Parsis	100,000
Jews	20,980
Miscellaneous	37,101

So the majority of the people instead of having a religion which stimulates them or at least tolerates the improvement of living conditions, have a sedative which lulls them into believing and hoping that the next turn of the wheel of fate may see them in a better state—perhaps so high up in the scale of things as to be reincarnated as a Brahmin or something equally desirable (or detestable, depending upon one's point of view). In the meantime the public-health man has to make the best of a bad situation and fight against great odds.

Ignorance is another stumbling block in the path of the public-health man in India. Census returns show that among males 16,938,668 are able to read, while 143,480,620 are not, even though there are 28 different languages to choose from to make the test. With women the situation is still worse, 1,600,763 being able

to read, while 151,397,030 are totally illiterate.

On this subject let me make a closing quotation from the report prepared for presentation to parliament, "India in 1921–22," page 214:

"In successive reports mention has been made of the difficulties attending the task of sanitary reform in India. The meager resources of the administration have hitherto been able to accomplish but little in the face of widespread popular apathy among 270,000,000 persons. What is required is the growth of a humanitarian and altruistic spirit, which alone can secure the enlistment of the enthusiasm rather than passive acquiescence of the educated classes in the task of uplifting the sanitary condition of the masses. The problem is in many respects educational, and its solution must necessarily be slow. For it will be almost impossible to safeguard India from a heavy death rate punctuated by disastrous epidemics until a change can be introduced into the prevailing ideas regarding hygiene. It is not merely the widespread poverty of India's masses which lends sanitation in India its peculiar difficulties. Far more serious is the tenacious adherence even of the educated classes to social customs and observances often diametrically opposed to the dictates of hygiene. It is indeed difficult to imagine how the public health of India can be satisfactory until the fundamental conditions which govern it have been improved. Only with the amelioration of the social and economic status of the masses, in conjunction with an increase in the receptivity of the classes to new ideas, will the lamentable backwardness in hygiene be radically remedied. So revolutionary a process cannot be accomplished in a day. For work of this kind to be accomplished successfully, two things are essential: In the first place, the administrative agency must enjoy the confidence of the people, and must work along lines in conformity with their mental processes. In the next place, it must operate in an atmosphere of genuine humanity and altruism, such as alone can supply the driving force necessary to overcome the dead weight of century-old inertia. . . . The upward path will be slow and difficult, for the inertia of centuries has to be overcome."

Many men in India hold that no more money should be spent in extending the present machinery of public health. But that any new money which becomes available should be devoted to educating the people to make them avail themselves of the machinery which already exists. They hold that education is the key to the problem. This should be of encouragement to us in China who have neither public-health machinery nor a strong public opinion on the question. There is no Great Britain to give us a public-health machine already made, and if there were, in our present state of knowledge we probably would not use it. The people must be educated up to the point where they desire a public-health machine and will take for granted that it should be supported and made use of. It is just at this point where the peace-time program of the Oriental Red Cross Societies comes in and were there time I would like to report the findings of the Bangkok Conference on this subject. But I shall have to leave that subject for another occasion.

The seeds of public health have been planted in every large country in the Orient. In no country has public health reached a stage of development comparable with European countries. The work may still be considered to be in its infancy. The drawbacks which apply particularly to the Orient are poverty, ignorance, and in some instances religious and political considerations. With the exception of Japan, the whole science of public health may be said to have been introduced into the Orient by foreign nations and in no country has it become entirely indigenous. Public health will not become firmly rooted in Oriental soil until the people make it a part of themselves. The greatest means for advancing public health in the Orient at the present time lies in actual demonstration and education.

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MAKE YOUR HOTEL RESERVATIONS FOR THE ANNUAL MEETING AT BOSTON, OCTOBER 8-11, 1923

THE TREND OF MATERNAL AND CHILD HYGIENE

WALTER H. BROWN, M.D., FELLOW A. P. H. A.
Director of Child Health Demonstration, Mansfield, Ohio

Read before the Conference of State and Provincial Health Authorities at Washington, May 14-15, 1922.

THIS is indeed the age of the child. The rapid growth of the maternal and child hygiene movement is one of the most striking developments in the public-health field. The sagacious health officer will have long ere this interpretated its significance, and laid his plans to make them contribute to the general advancement of public health.

The evidence of the wide interest in maternal and child hygiene is met at every turn. It has expressed itself in the official health field by the establishment of divisions of child hygiene, infant welfare stations and additional public-health nursing service. Organized efforts have resulted in the passage of the Sheppard-Towner Act—which we are discussing this afternoon.

In the field of the unofficial health agencies the development is equally striking. After working separately for many years six national organizations interested in child health formed the National Child Health Council. Out of this has come the amalgamation of two of the most prominent organizations into the new American Child Health Association. This organization has attracted to its leadership Secretary Herbert Hoover, who is turning his energies and experience from the American Relief Association to the child health field in America. This association will bring to the child hygiene movement greatly increased financial and social support. The policies upon which it is to be conducted are in keeping with the objectives of the public health officials of the country. One of the examples of the practical activities of the Association is the Child Health Demonstrations, which it is conducting in coöperation with the Commonwealth Fund.

The amount of public interest in a subject is not always a safe guide as to its relative importance in the public health field. Therefore the wise health official will give careful consideration to the unusual development of maternal and child hygiene in order that he may give sufficient emphasis to it in his program.

The educational officials of our country are also intensely interested in this subject. One can scarcely attend a meeting of educators in which the subject of the health of children is not given a prominent place on the program. Courses in health education are being established in many of the teacher training institutions of the country. Health is rapidly becoming an important subject in the school curriculum.

RELATIVE IMPORTANCE OF PROBLEM

An examination of the relative importance of the problem of maternal and child hygiene will be of practical interest. The public health administrator must consider both the quantitative and qualitative importance of various activities in planning his expenditures of funds.

The problem of maternal and child morbidity and mortality is quantitatively of great importance. There were 18,000 maternal deaths in 1921, or to state it another way for every 10,000 live births there were 68 mothers who died. These rates compare unfavorably with many other countries. Among our children under 5 years of age—we had a mortality of 248,432 (1920). These figures indicate a justifiable interest in maternal and child hygiene merely on a numerical basis.

The qualitative importance of proper standards of maternal and child hygiene is recognized by every thoughtful public health worker. There can be no doubt that if we were able to attack the problem of racial building at the source of life that many of our other pressing public health problems would either be automatically solved or decreased markedly in their importance.

While the speaker realizes the importance of child health in the field of preventive medicine, he also recognizes the fact that it is but a part of the whole. One of the purposes of this paper is to stimulate the public health official to carefully analyze the facts in order that he may give due emphasis to it in his program.

NEEDS OF THE FIELD

Public health administration has passed through several distinct stages. We first spent most of our time in the suppression of disease. Dissatisfied with our success, we developed methods of prevention. Now, we are rapidly passing into a positive attack on disease by means of health promotion.

The public health official has found it necessary to gradually widen the scope of his activities. He has ever sought to find the fundamentals in the solution of any particular problem. It is not the intention of the speaker to discuss detailed methods. He should like to draw your attention to what he considers some essentials for an adequate maternal and child hygiene program.

The success of any public health procedure depends largely on sound organization—with sufficient powers and personnel. A properly organized division of Child Hygiene in a State Department of Health can stimulate the local community and will tap the resources in the national field. This seems to me to be one of the ways in which the Sheppard-Towner appropriations will be most effective. It is my understanding that the Administrative Board desires to assist the States in establishing sound administrative machinery for the protection of maternity and infancy.

Improved medical and nursing service is absolutely essential, if we are to further reduce maternal and child mortality. This applies both to the amount and quality of the service. Everyone here is familiar with the unequal distribution of physicians which has resulted in many undoctored communities in our country. This is a subject which deserves separate discussion.

The quality of our medical and nursing service is of even greater importance. When we consider the fact that of the 18,000 maternal deaths 60 per cent of them are due to septicemia, we realize the gravity of the situation. This gravity is increased, if we reflect further on the kind of medical care which is received by the average infant or child. This is not a denunciation of the medical profession—it is a plain statement of fact. The correction of these conditions is of mutual interest to the medical profession and the public health worker.

PUBLICITY AND EDUCATION

The facilities for suitable publicity and education are of vital importance. The objective of our publicity should be to build up an informed public opinion which will support a well rounded program of child hygiene. This program must contain ample provision for the education of the individual. Our educational matter must be of proper character and our personnel must understand the principles of teaching. Too often we mistake public health information for education.

FUTURE DEVELOPMENTS

A commendable amount of progress has been made in recent years in the field of maternal and child hygiene. The future developments will be dependent upon the securing of the above mentioned essentials—plus the establishment of proper relationships between three distinct groups. I refer to the

(a) public health group
(b) medical group
(c) voluntary health organizations.

Each one of these groups has a definite part to perform and is charged with a particular responsibility.

The public health group has the greatest responsibility and the greatest opportunity. They should furnish constructive leadership for the child hygiene movement. Such leadership is needed to wisely guide the rapidly increasing enthusiasm for this type of work. The problem of

satisfactory medical relationship is no simple matter. To enlist the active co-operation of all the agencies in the field is a task for a public health statesman.

The ultimate success of any child hygiene program will depend upon proper medical relations. The time has arrived for the medical profession to actively participa
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medical service to the inhabitants of the rural districts, your committee has attempted to secure data regarding such service by means of a circular letter addressed to all the state health officers requesting information as to the condition of affairs in the rural districts, (1) in general, as to the adequacy of medical service in such districts; (2) the proportion of inhabitants to the practitioners available; (3) the average age of the practitioners, and (4) the increase or decrease in the number of practitioners during recent years.

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Nevertheless, it has served to draw picture of conditions relating to medical service in rural districts which is most enlightening, and which may be summed up as follows:

1. There is a universal tendency for physicians to abandon the rural districts in favor of the cities.

2. The number of those remaining belong in a very large proportion of cases to the older generation.

3. There is little or no tendency for recent graduates to seek practice outside of the large centers of population.

4. In hundreds of rural districts medi-

cal care is most inadequate or absolutely lacking.

Replies from 30 of the states indicate that the condition of affairs differs only in degree, varying from serious to desperate.

Of the other states from which information was obtained, five seemed to

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congregate in the larger cities states that he understands from statistics compiled by the American Medical Association that the country communities are still well supplied.

Another communication from a state health officer is to the effect that there has been a general tendency on the part of the legislature to license anyone to practice medicine who can prescribe hot foot baths, chill tonics or Gray's ointment. "Fortunately," he adds, "the legislative license in most cases restricts the practice to the county in which the 'expert' resides."

The report from Kansas states that in one county with a population of 6,182 there are but two doctors—one forty-seven years of age and the other fifty-two. In a list of 12 counties with 20 doctors, but one is a recent graduate.

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Sussex county, in New Jersey, which formerly had one or two physicians, has none.

In New Mexico the ratio of physicians to population is 1 to 2,000. Five physicians must travel 185 miles to reach the opposite end of the county.

North Carolina states that there are fewer physicians to the population there than in any state in the Union, with possibly one or two exceptions.

In North Dakota some counties have

satisfactory medical relationship is no simple matter. To enlist the active co-operation of all the agencies in the field is a task for a public health statesman.

The ultimate success of any child hygiene program will depend upon proper medical relations. The time has arrived for the medical profession to actively participate in the public health movement. In order to bring this about, the public health group should make a concerted effort to convince the physician of their mutual interests.

The medical group must prepare themselves to meet the demands for preventive service which will come from educated public opinion. Fortunately some of the medical leaders are alive to this necessity. In Mansfield, we have a small group of progressive physicians who are actively at work along this line. Further it is the responsibility of the medical group to assist in raising the standards of obstetrical practice and the medical care of children.

The voluntary health organizations are at once the scouts and the reserves of the public health army. One of their big functions is the exploration of little known fields. With their freedom of action, they can make these explorations when the official agency is limited either by funds or public sentiment. Another important function—is to support and supplement the official agency. Only too frequently the public health official fails to tap the resources which this group can make available.

We are on the upward trend in the child hygiene movement. The widespread interest in this case coincides with a relatively important problem in the public health field. In the course of our discussion, we have pointed out certain essentials for the solution of the problem. We have indicated certain resources which are available for the health officials. The outcome of this movement is of vital importance to our country. Its success depends upon alliance between the public health officials, the physician and the voluntary health agencies.

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REPORT OF THE COMMITTEE ON MEDICAL SERVICE OF THE STATE AND PROVINCIAL HEALTH AUTHORITIES

Read before the Conference of State and Provincial Health Authorities at Washington, May 14-15, 1921.

BELIEVING that the most important problem in the field of medical practice which to-day confronts the people of the United States is that of medical service to the inhabitants of the rural districts, your committee has attempted to secure data regarding such service by means of a circular letter addressed to all the state health officers requesting information as to the condition of affairs in the rural districts, (1) in general, as to the adequacy of medical service in such districts; (2) the proportion of inhabitants to the practitioners available; (3) the average age of the practitioners, and (4) the increase or decrease in the number of practitioners during recent years.

Replies have been received from 36 of the 48 states. The information obtained has naturally been of varying degrees of value, dependent largely on the facilities of the state health officer for obtaining it. Nevertheless, it has served to create a picture of conditions relating to medical service in rural districts which is most enlightening, and which may be summed up as follows:

1. There is a universal tendency for physicians to abandon the rural districts in favor of the cities.

2. The number of those remaining belong in a very large proportion of cases to the older generation.

3. There is little or no tendency for recent graduates to seek practice outside of the large centers of population.

4. In hundreds of rural districts medi-

cal care is most inadequate or absolutely lacking.

Replies from 30 of the states indicate that the condition of affairs differs only in degree, varying from serious to desperate.

Of the other states from which information was obtained, five seemed to be satisfied with the condition of affairs. One of these—Rhode Island—has only one rural county, but, strange to say, Minnesota is included in this number, and according to Dr. E. P. Lyon, dean of the University of Minnesota Medical School, the people of the rural districts, though not satisfied, are well cared for. A study of the statistics furnished by Dr. Lyon, however, would seem to throw some doubt on the accuracy of his conclusions, certainly as regards the less populous districts in the state.

It is not possible in a report of this length to do more than present some of the more striking comments received from the various state health officials.

From California the Board of Medical Examiners reports inability to furnish the information required, for the reason that the records of that state simply show classification of physicians and surgeons, osteopaths, drugless practitioners, naturopaths, chiropodists and midwives practicing in various counties, with no possibility "of segregating those in the cities from those engaged in practice in the rural districts." The secretary-treasurer of the board while agreeing that the modern tendency is for physicians to congregate in the larger cities states that he understands from statistics compiled by the American Medical Association that the country communities are still well supplied.

Another communication from a state health officer is to the effect that there has been a general tendency on the part of the legislature to license anyone to practice medicine who can prescribe hot foot baths, chill tonics or Gray's ointment. "Fortunately," he adds, "the legislative license in most cases restricts the practice to the county in which the 'expert' resides."

The report from Kansas states that in one county with a population of 6,182 there are but two doctors—one forty-seven years of age and the other fifty-two. In a list of 12 counties with 20 doctors, but one is a recent graduate.

In Kentucky 40 counties are without adequate medical service, one or more communities being in dire need of more physicians; and one county without a single licensed physician. The majority of physicians in rural counties are at or past middle age.

In one county in Louisiana the ratio of physicians to population is 1 to 1,385. But one physician in this county has been in practice less than 10 years.

In Maine there are 12 or 15 places in which the need for physicians is great.

In Mississippi many counties with a population of twenty to thirty thousand have physicians only in the large centers, leaving the interior without a single resident physician. In the whole state the proportion of physicians to population is 1 to 1,120. Remote districts are 10 to 15 miles or more from physicians. Death certificates with "no attending physician" signed are on the increase.

Several large counties in Montana have but one physician, and in spite of a bonus of $100 a month offered by the county commissioners in one county, no physician has been obtained up to date.

In one county in Nebraska with a population of 1,433 and an area of 742 square miles, there is no physician.

Sussex county, in New Jersey, which formerly had one or two physicians, has none.

In New Mexico the ratio of physicians to population is 1 to 2,000. Five physicians must travel 185 miles to reach the opposite end of the county.

North Carolina states that there are fewer physicians to the population there than in any state in the Union, with possibly one or two exceptions.

In North Dakota some counties have

no physicians and some only one or two.

In York county, Pennsylvania, outside of the city of York there is a rural population of practically 100,000 to be covered by 37 physicians.

In Tennessee there are counties with a population of seven or eight thousand with no more than four physicians. In such counties there are practically no roads and such as exist are almost impassable in winter.

In Vermont out of a total of 248 towns and cities 102 were without physicians when recently checked up. This includes a number of towns which formerly supported anywhere from one to three or four physicians.

In Virginia, 12 years ago, in 39 counties there were 364 physicians. There are now 258. In one of the rural counties the ratio of physicians to population is 1 to 3,370.

In Washington no physician in the rural counties has been in practice less than 10 years, and there is an entire absence of medical service in a few of the counties.

In West Virginia in a remote rural section there is scarcely any medical service. One county of 648 square miles and a population of 11,713 has six physicians—one in practice 15 years; one 19 years; one 25 years; one 26 years, and two 42 years. Two of these men are over seventy years of age and one nearly eighty. Another county of 574 square miles has a population of 9,601 with but five physicians, who have been in practice from 12 to 33 years.

Wisconsin, without giving details, states that the condition is serious. One county with a population of 3,646 has one physician. Another with a population of 10,462 has three physicians.

In New York state during the past three years the State Department of Health has succeeded in placing in the rural districts some 50 physicians to meet over 90 calls for medical service. Questionnaires addressed to these physicians have shown in a number of cases that they are making a good living. A number complain of the arduousness of the work; many of the lack of facilities to practice scientific medicine, and still others of the lack of appreciation among rural inhabitants of the value of medical service.

The situation in New York state, of which a careful survey has very recently been made, shows but little improvement during the past few years. In spite of its immense population—nearly 11,000,000—there are areas of several hundred square miles with 1,500 or more population within which there is not a single resident physician.

In one typically rural and prosperous agricultural county with an area of 655 square miles, having a population in 1910 of 38,000 and in 1920 of approximately 37,000, there were in 1912, 62 physicians, and in 1922, 44. The average number of years in practice at the present time is 27½, and during the last 10 years practically no physicians have entered the county to practice.

This, then, is the problem which confronts the people of the country. It must be solved by its health officials, the organized medical profession, medical educators and the legislatures. The causes for the condition have been discussed for years, have been pretty well agreed upon, and need not now be reviewed. Your committee has on more than one occasion called attention to the defects of modern medical education in fitting men for general practice. It is a hopeful sign that at the recent Congress on Medical Education held in Chicago there was a very general agreement among the speakers that medical education as a whole should be so coördinated and revised that every branch of medical knowledge should be imparted with the main purpose of turning out general medical practitioners taught to think for themselves, and with only a general knowledge of the so-called specialties, such as will enable them to take care in an efficient manner of the majority of cases met with in their practice, and the ability to refer to qualified

specialists patients requiring special advice and treatment. It is to be hoped that the results of this policy will in time turn out general practitioners of independent character who will be willing to cast their fortunes in the more remote districts. But this can be realized only in the distant future.

It would seem that the problem to be solved is dependent on a world-wide psychology, but the demand for its rapid solution is imperative. Many practical suggestions have come from various health officials and medical educators. In a number of states local communities have worked out their own problem on a village, town or county basis. In New York at the session of the legislature just closed a bill was introduced at the instance of the Governor, after consultation with the heads of all of the county medical societies of the state and representative of other medical organizations, which may be said to be an evolution or remains of the more elaborate and comprehensive so-called Health Center bills which met with such opposition, especially from the medical profession. The present bill is short, and if not endorsed directly by the medical profession, at least was not opposed by it. Briefly, it provides that the board of supervisors of a county may appropriate any sum of money for any public-health work within a county which does not contain any first or second class cities; in other words, strictly rural counties. Such work may include the establishment of hospitals, clinics, services of a public-health nurse, and, presumably, subsidizing local physicians. On the first day of January each year the amount so appropriated by the board of supervisors shall be transmitted to the state comptroller. The purposes of such appropriation shall be approved by the state commissioner of health, who is also empowered to formulate standards of construction, equipment and administration of the work contemplated. On receiving such approval of the commissioner of health, the comptroller shall draw his warrant for one-half of the amount appropriated by the county.

There can be no question that the unit for public-health work is the county, and county officials should be made directly responsible under the supervision of the state officials for conditions regarding health within the county, and your committee believes that in spite of theoretical objections to so-called state aid for public-health work, as a matter of practical necessity it can not be avoided in thousands of counties throughout the United States that would be unable or unwilling to meet the situation entirely from their own resources.

It would seem to your committee that the immediate necessity is to provide in some way throughout the rural districts for the establishment of smaller or larger open hospitals, perhaps on the cottage plan; a very great extension of public-health nursing service, and in places where physicians are not available provision for visiting and bedside nursing service in local communities. The value of facilities for the more scientific practice of medicine in rural communities, such as laboratory service and the like, can not be overestimated, but in advance of such attainment the problem of medical and nursing care, even without the refinements of scientific practice, is paramount. It is no exaggeration to state that the people of the cities, including a large number of the foreign-born, are receiving infinitely better medical care and treatment than thousands and thousands of those of the best American blood, who have been and must be the backbone of the nation, and who still cling to the open spaces of the land with only such care of their health as may be furnished by those without technical knowledge or training and such as was available to their ancestors in the pioneer days of this country.

The health officials of the state are fully aware of this fact and are trying to impress it upon others who have the means of alleviating it.

MATTHIAS NICOLL, JR., New York,
Chairman.

REPORT OF COMMITTEE ON INDUSTRIAL HYGIENE OF THE STATE AND PROVINCIAL HEALTH AUTHORITIES

Read before the Conference of State and Provincial Health Authorities at Washington, May 14-15, 1923.

AFTER reading over the last two Annual Reports (1921 and 1922) of the Conference of State and Provincial Health Authorities of North America, the new Chairman would comment as follows:

The three questions set up by the Committee on Industrial Hygiene are quite apropos. The Chairman would suggest the addition of a fourth question to the effect: *Is the subject of occupational diseases a function for a State Department of Health?*

In attempting to add suggestions to the answers already supplied in the 1922 Report for the three questions previously proposed, I would state as follows:

(1) Industrial hygiene *is* a proper function for a State Department of Health because it deals with the health, welfare and industrial longevity of about 40,500,000 of the population (32,500,000 males and 8,000,000 females) for the 8 to 12 hours out of the 24-hour day during which time most workers have but a limited control over their own environment and for which time a great amount of health education is highly desirable. The health aspects of the supervision of this vast number of the productive portion of the population, while under load, is a most important phase of the economics of national wealth, happiness and defense. It is believed that such responsibility should be left to those most familiar with health procedures, except that the other divisions or departments of government may carry out administrative orders and compensation matters. Furthermore, the last occupational mortality statistics for the country, compiled by the Census Bureau for the year 1909 show at least six afflictions which have undue prevalence among industrial workers, all of which are considered preventable, controllable, or greatly reducible. These with their percentage death rates are, among males: tuberculosis (17½ per cent); accidents (11.8 per cent); pneumonia (8.5 per cent); suicide (2.8 per cent); typhoid (2.4 per cent); poisoning (0.8 per cent)—or a total of 43.8 per cent of all of the deaths among occupied males. A similar 43.7 per cent occurs among occupied females. In the female group tuberculosis itself ran 21 per cent of the total. It may be said that, conservatively speaking, 50 per cent of the deaths of industrial workers come under our usually accepted preventable groupings.

The significance of this is furthermore seen in the fact that over 60 per cent of this mortality among males occurs before forty-five years of age and over 75 per cent occurs among females before forty-five years of age. Again it is to be noted that consumption itself is the leading cause of death in 110 of the 140 occupations listed, in which 24 principal causes of death, other than by injuries, are listed and that where accidents head the list, as in coal mining and railroading, etc., consumption invariably stands second. The total preventable deaths among occupied persons each year in the country is estimated at 300,000 or approximately the same figure as the number of aliens admitted to the country under the immigration act. Add to the above the vast amount of disability from sickness and other causes with its associated dependency and burden, all of which is related to preventable disease, and we have an imposing array of material for answering *yes* to this question.

In regard to the second question, whether industrial hygiene should have a distinct position in the health organization it may be said that the subject is so intimately related to peculiar health matters like physical examinations, correction of impairments, nutrition, health habits, recreation, etc., on the one hand, and the questions of the principles of sanitation, ventilation, toxicology, vital statistics and

communicable disease on the other hand, that it should be either a Division in a State Department of Health or a Bureau under the Division of Administration, where it may make use of the other divisions and bureaus of the department as required for the execution of its duties. The latter arrangement, that is, the Bureau in the Division of Administration, is probably the least expensive, since it allows of limited personnel which is usually all that is needed for the special studies which often occupy one line of research for weeks or months at a time and is probably the best form in which to start a movement for industrial hygiene in a health department.

In answer to Question III, What should the program incorporate? we make suggestions as follows: We endorse the four headings laid down for the program of a Division of Industrial Hygiene (p. 81, of the 1922 Report), but believe that possibly all could be included in three headings as follows:

(1) *Advisory capacity*, especially to employers and also to employes, when opportunity presents. In Ohio we find that probably 90 per cent of industrial health hazards brought to our attention through the reporting of occupational diseases can be corrected by a program of suggestions to employers, so that only rarely is it necessary to turn matters over to the Department of Industrial Relations or other state departments for departmental orders.

(2) *Research*, including surveys, special investigations, and studies of reports and records, using other departments, divisions and bureaus to assist.

(3) *Education and publicity* as already laid down in the proposed program. We emphasize the practice of designating to employers and employes their respective responsibilities.

The answer to our proposed fourth question, "Is the subject of occupational diseases a function of the State Department of Health?" is as follows:

We consider this to be the chief reason why a health department should take notice of the whole situation because: (1) occupational diseases involve the *health* of workers; (2) occupational diseases are preventable to a very large extent; (3) occupational diseases are rarely simple or easily understood, and are often confused with other causes of disease so that considerable concentration on relative causes and effects makes a specialized preventive-medical personnel essential; (4) the real solution of occupational disease is preventive rather than curative or compensative; (5) the correction of involved causes is more open to suggestion than to departmental orders; (6) the non-specific occupational diseases are the most important. (These include those diseases which emphasize themselves especially in connection with occupations such as tuberculosis, pneumonia, cardiac incompetency, rheumatism and musculo-osseous limitation of activities, nervous debility, etc. These are practically inseparable, except in degree, from similar afflictions in the population at large with which it is considered only health departments are competent to deal. The compensation of occupational diseases does not as a rule cover these non-specific afflictions.) (7) The research nature of occupational diseases often demands the closest coöperation between medical men and sanitarians for which the department of health affords the best machinery; (8) there is less duplication of reports, controversies and special hearings, if occupational disease cases are left to health authorities rather than to lay departments. Such hearings are also very expensive. (9) Sickness and mortality in other related fields of health work are better controlled by medical than by lay machinery; (10) community coöperation and education in such matters as physical examinations, correction of impairments, etc., all of which are so vitally connected with industrial hygiene, are better conducted and apt to receive more acceptance if promoted by the department of health.

JOHN E. MONGER, Chairman.

REPORT OF COMMITTEE ON SCHOOL HYGIENE OF THE STATE AND PROVINCIAL HEALTH AUTHORITIES

Read before the Conference of State and Provincial Health Authorities at Washington, May 14-15, 1923

DURING the past year there have been notable evidences of increasing interest in the various ramifications of school hygiene. This has not been confined to official agencies but has been demonstrated by a number of organizations engaged in child welfare work. It would lengthen this report unduly to go into the details of these endeavors; and we feel that it will be sufficient to refer you to the sources from which such information may be obtained.

Through the courtesy of the American Child Health Association, we are able to give a valuable list of reference reports. You are familiar with some of the papers mentioned by the Association. However, we shall give the entire list as prepared by that organization, and it is possible that some of the papers have not attracted your attention. They are:

Report of the Advisory Committee of the National Child Health Council.

Report of the Mohonk Conference of June, 1922.

Reports of the Joint Committee on Health Problems and Education, of the National Education Association and the American Medical Association. This committee made two reports in 1922, one covering returns from questionnaires sent to 622 school superintendents in cities and towns in the United States with a population ranging from 2,500 up to the largest. The other report of the committee was on health improvement in rural schools. Copies of these reports can be obtained from Dr. Thomas D. Wood, 525 West 120th Street, New York City. The price of each is 25 cents.

From the Detroit Department of Education may be obtained A Course of Study in Health Instruction for the Elementary Schools, and A Year's Experience with Nutrition Class.

The Board of Education of Trenton, New Jersey, has issued a tentative syllabus for the hygiene work in the schools.

Binghamton, New York, has published a pamphlet entitled "Health Education in the Binghamton Schools."

Cincinnati has a multigraphed draft of a course of study in health education for the schools of that city.

The New York State League of Women Voters has published a report on child health conditions in New York, which includes a report on school health work—140 pages, price 15 cents; and the National Child Health Council has a ninety page pamphlet on Child Health in Erie County, price 20 cents.

A report on Community Dental Service may be obtained from the Service Bureau on Dispensaries and Community Relations of Hospitals of the American Hospital Association, Chicago.

We would particularly suggest your consideration of the report of the Advisory Committee on Health Education of the National Child Health Council. This has recently been published by the United States Bureau of Education, Department of the Interior, in a pamphlet entitled "Health of School Children."

We may add to the above list the pamphlet on Requirements for Teachers, issued by the State Board of Education, Virginia, in which there is a section devoted to the courses of health study necessary for teachers as a condition precedent for obtaining a certificate, and two pamphlets issued by the State Board of Health, Virginia—catechisms on health for primary students and grammar grades.

In the consideration of school health work two questions press for solution; one is the placing of responsibility or the division of responsibility as between the health authorities and the school authorities; the other is the extent of the endeaver that should be entrusted to unofficial agencies.

We cannot overlook the development of this feature of health work. It is becoming more extended constantly. In addition to physical inspection and the inculcation of ordinary health knowledge, we are having health crusades, nutrition classes, correctional clinics, playground and recreational activities and other lines. There is not one of these ramifications that lacks appeal. They are all worthy efforts; but unless new and greater sources of revenue are made available, the older and more valuable lines of work

may be subordinated to the new and untried. This condition invites the attentive consideration of conservative health officers if we are to maintain or establish a proper conception of relative values.

It may be helpful in connection with the consideration of the question of division of responsibility, so far as it affects official agencies, to cite the experience of one state where there has been no interdepartmental friction. The teaching of school hygiene is compulsory. The curriculum and the textbooks are approved by both the state board of health and the state board of education. The teachers are required to pass successfully examinations on: school hygiene, physical education and physical inspection. These curricula and examinations are to be jointly approved by the two state boards. These are the educational factors that are controlled jointly.

The same dual control is exercised over the functional operations. Teachers are required to inspect physically the school children; but the inspections are to be approved by the state board of health. The follow-up work is conducted by the school nurse, who must be approved by the board of health. The state supervisor, in charge of the work, is the joint agent of the board of health and the board of education, with salary and expenses jointly defrayed. When this supervisor, or a representative of the supervisor goes to a school, local health authorities cannot object, because the state board of health is represented, and for the same reason, school authorities cannot object to a representative of the state board of education.

We have deemed it advisable to outline this method of operation because it stands the pragmatic test. Its practical operation for a year has developed no point of friction and it is alike satisfactory to the health authorities and to the state board of education.

The other question is less easy to settle. In dealing with unofficial agencies or associations the personal element enters more largely than in official dealings where definite laws limit activities. The personal experience of any health officer might be valuable in its applicability to the guiding of tentative agreements or understandings; but such experiences cannot be accepted as conclusive.

There are, in fact, several angles to the question of unofficial effort. Official agencies cannot dodge their responsibilities or delegate their powers; consequently, it might seem that the control of any phase of health work in the schools or in connection with school children must rest with the constituted authorities; and, if that be recognized as true, the question at issue would seem to be the measure of initiative to be encouraged on the part of private agencies and the proportion of direction to be left with them.

Even with this restriction, however, the committee does not feel competent to make a recommendation, but it does deem it proper to express the opinion that unofficial agencies are naturally more prone to experiment than are official agencies charged with definite responsibilities, that such experiments are necessarily directed most frequently toward new points, that enthusiasts on specific topics are normally inclined to magnify the importance of their particular endeavor and, therefore, to minimize other and possibly greater values.

That we should welcome helpful suggestions and active aid from outside sources is so obvious that it needs no stating; but how far outside endeavor should determine health work is something essentially different.

W. C. FOWLER.

REPORT OF COMMITTEE ON SANITARY ENGINEERING OF THE STATE AND PROVINCIAL HEALTH AUTHORITIES

Read before the Conference of State and Provincial Health Authorities at Washington, May 14-15, 1922.

IN MAKING this report the Committee on Sanitary Engineering decided to discuss some of the problems which confront the Divisions of Sanitary Engineering, and which are more or less common to all of them. One of these is the control of stream pollution.

Streams since time immemorial have been considered the logical place for the disposal of all kinds of waste and refuse, and every community situated on a stream considers it its inalienable right to so use it, regardless of the effect it may have on a neighboring community. This practice has been and still is so general and has been so persisted in that in many instances it has become a serious menace to public water supplies.

The importance of the control of stream pollution was very forcibly brought out in a Progress Report of Committee on Industrial Wastes in Relation to Water Supply, of the American Water Works Association Standardization Council, published in May, 1922.

This committee conducted studies of the effect of discharge of industrial wastes into streams on water supplies and tabulated the results by states. This shows that more than half of the states have suffered more or less damage to public water supplies on account of pollution by industrial wastes. To quote from this report, "with the growth of industries the injurious effects of industrial wastes upon water supplies and water purification processes are becoming more and more important. Serious troubles from this source have already been experienced in numerous places and water supplies are being menaced to a greater and greater extent by the discharge of industrial wastes into existing or potential sources of water supply. The subject of industrial wastes in relation to water supply is, therefore, very timely, and of vital importance."

It is the opinion of your committee that the above quoted statement is beyond refutation. Anyone at all familiar with the conditions cannot fail to see the grave danger threatening the public water supply of the nation, nor to recognize the necessity of proper control of disposal of wastes, not only from the industries, but of a domestic nature, so that the water supplies may be safeguarded. The above mentioned report shows that an average of ten supplies each, in the states from which replies were received, have suffered from this trouble, one state alone reporting 138 supplies affected. It states that "the extent of the pollution may be so great as to interfere with the ordinary water purification processes or to actually render such process incapable of producing a satisfactory water." It is not difficult to foresee what this means, if allowed to continue uncontrolled. Already cities have been put to great expense to seek new sources of supply, when proper control of waste disposal would have been the wiser from an economic point of view. However, in the absence of proper authority or control this method has been rendered impossible.

Beet sugar refineries of Ohio have seriously affected the water supplies of that state, the State Board of Health reporting that "The vegetable organic matter increased the color and bacterial content of the water, and interfered with the filtration and chlorination processes. The ordinary purification facilities, including storage, aeration, coagulation, filtration and chlorination, were only partially effective in remedying the objectionable effects."

Pennsylvania and West Virginia have reported serious trouble from discharge

of mine drainage water into public water supplies. The *Engineering and Contracting* magazine for February 14, 1923, contained an article by Mr. J. W. Ledoux, consulting sanitary engineer, entitled "Water Supply Contamination by Mine Drainage." It is a discussion of the situation in Pennsylvania, and brings out the seriousness of conditions from the water supply point of view. In some sections of the state the problem has already reached the stage where careful study is necessary to decide whether the sacrifice of the water supply or of the coal is best from an economic standpoint. It has been estimated by Mr. C. A. Emerson, formerly chief sanitary engineer with the Pennsylvania State Department of Health, that the cost to the state, of this pollution by mine drainage, is more than eight million dollars annually. In some instances it has been necessary to abandon a water supply and seek another source, on account of the acidity produced by mine wastes. The cost of chemicals for treating the water has been prohibitive, necessitating the procurement of another source of supply.

Another source of trouble, and one which is not dependent on natural, geological deposits to delimit its field, is wastes from gas and coke plants and from wood alcohol plants. Milwaukee has suffered badly from tastes and odors in its water supply produced by wastes of this character. They are responsible for the so-called "creosote" odors and tastes in water, which are intensified by disinfection by chlorine. As it is a generally recognized fact that all surface waters should be disinfected before use as a domestic supply, and as these "creosote" odors are noticeable even in very great dilution, one part of waste to ten million parts of water, the menace to water supplies from this source is apparent. At Milwaukee it was found that the tastes were produced by one part of waste in 500,000,000 parts of chlorinated water. It is evident that under such circumstances natural dilution, especially in streams, cannot be relied upon to prevent trouble. According to the report of the Committee on Industrial Wastes in Relation to Water Supply, above referred to, no satisfactory method of water purification has been found to eliminate the tastes and odors due to the phenol wastes. It has been found necessary to begin corrective measures on the waste before discharge into a water supply. At Milwaukee experiments with the activated sludge process of sewage disposal indicate that this will be able to protect the water supply even when the phenol carrying wastes in the sewage are very considerably increased.

Some sections of the country are affected by the salt water and crude oil from operation of oil wells. The discharge of salt water from oil wells causes the majority of trouble from this source. It not only pollutes the surface waters but in some cases, notably in Oklahoma, underground waters have been affected through abandoned wells which were ineffectively plugged. Oil refinery wastes also cause trouble. It is reported by Mr. F. M. Veatch that the Verdigris River has been so badly polluted by these wastes that at times it is impossible to wash dishes in the city water of several cities without leaving a taste on the dishes.

We have mentioned some of the most glaring examples of stream pollution by industrial wastes. It does not appear to your committee to be necessary to burden you with a detailed reference to result of contamination of water supplies by each individual type of industrial waste. The literature is replete with such illustrations; in fact, the bibliography on the subject would be nearly as long as this report itself. The problem has received recognition by communities, State Health Boards and by the Federal Health Service, and thousands of dollars have been spent in making investigations for the purpose of correcting existing evils of this character, or to find some means by which it can be prevented in other places. Many other types of industrial wastes

may be as obnoxious as those mentioned above, for example, chemical manufacturing wastes, corn products wastes, dye wastes, leatherboard and strawboard wastes, wastes from munitions plants, pulp and paper mill wastes, tannery wastes, textile industry wastes, both from woolen and cotton mills, and many others are on record as having seriously affected the quality of existing water supplies, or rendered potential sources unfit for use. The states of Connecticut and New Jersey have made numerous investigations of streams, and practically every stream in those states has been found to be more or less seriously affected by wastes of one sort or another.

The states of Pennsylvania, Ohio, Minnesota, Wisconsin and others have found very similar conditions, and it is the belief of your committee that most of the states would find that many of their water supplies are facing a grave danger from this source if thorough investigations were made. In view of the fact that practically every kind of industrial waste may be considered as a potential source of pollution of water supplies, the importance of early recognition of this problem cannot be overestimated.

It is not our intention to outline methods of correction of existing evils of this character, for two reasons. First, because no remedy has been found to correct the water after the pollution has occurred, and second, because each individual case is a problem by itself which can best be corrected after thorough study of conditions. Our object in discussing this subject is rather to bring to the health authorities a realization of the seriousness of the problem, in the hope that it may direct the attention of some of the less afflicted to the dangers ahead, so they may take steps to prevent a wholesale destruction of water supplies in their state. Boards of health are charged with the duty of preventing the preventable diseases, and of securing the people against unnecessary exposure to disease. It is also their duty to prevent conditions which cause disease. It is a well recognized fact that a good water supply is one of the most potent factors in maintaining good health. The work of preservation of the sanitary and esthetic quality of a public water supply is, therefore, a logical and proper part of the duties of such health boards. The esthetic consideration is included because if a water, although safe from a sanitary point of view, is objectionable on account of tastes or odors or for some other physical characteristic, it may cause consumers to turn to other sources, which may not be safe, thus creating a strictly public-health problem.

It has been learned that in most of the states where serious industrial waste problems have occurred, the state boards of health have some control, but in only five has ample authority been given the health authorities to fully control conditions. Practically all the states report that enforcement of the laws is materially hampered for lack of sufficient appropriations for field and laboratory personnel.

In general there are three lines of procedure for correcting unsatisfactory conditions due to pollution by industrial wastes, namely:

1. Purification of the water.
2. Treatment of the industrial waste before discharge.
3. Preventing the discharge of the wastes into the water supply.

The boards of health should have sufficient authority to compel the employment of one of these, but before ordering any particular community or industry to carry out any measures, a careful study should be made to determine which is the best remedy, giving due consideration to established industries.

It is believed by your committee that the control of stream pollution for the protection of existing and potential water supplies is one of the most important problems with which the Sanitary Engineering Divisions of the State Boards of Health have to deal, and the health boards of our states should see to it that every

effort is made to secure the enactment of laws to place in their hands the necessary authority to enable them to effectively control the situation, and to secure adequate appropriations to provide the necessary field and laboratory workers to carry out the investigations. A change of policy in some states will be necessary, in order to give the public the protection to which it is entitled.

This is one of the many problems confronting the sanitary engineer in the state health departments, but in view of the trend toward destruction of all surface sources of water supply, it is believed to be of sufficient importance to take a prominent place in our report. It is hoped that this presentation of this subject will stimulate discussion which will be of help to those states which are not yet seriously affected, to the end that they may institute preventive measures and thus avoid the difficult and expensive corrective measures to which some of our states are already put.

No attempt has been made to cover the field of sanitary engineering in public health work, as it was thought that more could be accomplished by concentrating on one problem, leaving other problems such as control of water supplies, sewage disposal, milk supply, housing, etc., for subsequent reports.

CHAS. F. DALTON, Chairman.

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THE SANITARY INDEX

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A SANITARY index for the comparison of the health of different communities has ever been sought. Failing the possible use of a single figure, other than the infant mortality rate, certain specific mortality rates have been used. At one time it may be that of typhoid fever, or at another it may be the combined one for influenza and pneumonia.

A study of the statistics of Brend and Findlay,[1] applied to the infant mortality statistics of England and Wales, of the United States and of New Zealand, showed three constant fields operating in infant mortality rates. One represented a content of respiratory diseases, a second represented so-called filth-borne diseases, and the third was an irreducible corresponding to the bed rock irreducible of the authors mentioned. Irrespective of race, or climate, social or economic conditions, irrespective of the variations of the content of either type of disease mortality, approximations of the so-estimated rates to the recorded rates were so nearly exact as to lead to the demonstration that the irreducible for the male was greater than for the female. They were as well so exact as to be of reasonable value for checking completeness of registration of births and possible placement of mortalities listed as unknown.[2] More recently I have found that discrepancies could as well be due to an unsuspected content of nonresident deaths. In sum, there was good evidence to show that the excess of mortality during the first month over the irreducible and that operative during the remainder of the first year was in agreement with the argument of Brend and Findlay, namely, a measure of variant respiratory diseases on the one hand, and that of diarrheal disease on the other hand.

It being the argument of Brend and Findlay that the same two disease factors were operative in no dissimilar fashion throughout life, I was led to similarly study the possibility of constants operating in crude death rates of the registration area of this country, of states and of cities. In a preliminary paper,[3] a similar opportunity was evident. Estimated rates were the more in accord with reported rates dependent on the absence of

ill-defined and unknown mortalities. The one notable exception of a well-known metropolitan city having a lower recorded crude rate than that of its state, while the estimated rate was yearly higher than the state, led to a further analysis of what had been called an irreducible. The so-called irreducible was a measure of "all other diseases." With a constant for replacement of this irreducible, irrespective of unit area, irrespective of year, it was possible to show that crude death rates had a content of action from three operating fields, namely, respiratory diseases, filth-borne disease and all other diseases.[4] Possible deductions at the time were drawn. One was given as illustrative of the use of the discrepancy of recorded and of estimated total rate as a check on excessive estimation of population, found true of a metropolitan city when revised Bureau of the Census figures based on the known 1920 population were issued. Quite accidentally I have recently stumbled upon the larger factor apparently explaining the unfilled previously mentioned discrepancy as well as discrepancies of smaller content between recorded and estimated total rates. The following table shows that variations between the recorded and estimated total mortality rates are lessened when correction of crude rates for factors of age, sex and nonresidents are made. The adjusted figures for the years 1920–1921 are taken from the Bureau of the Census and those for the year 1922 are figured on the basis that the same factors hold true for that year as for the two previous years. Separate figures show that New Haven alone of the three cities has a standard population and a 6 per cent excess rate for nonresidents. The other two cities have a substandard population for age and sex and a much smaller excess for nonresidents than this city. The table is as follows:

	New Haven			Bridgeport			New York City		
	1920	1921	1922	1920	1921	1922	1920	1921	1922
Recorded crude rate	14.5	11.6	13.3	12.8	10.5	11.1	13.0	11.2	11.0
Estimated rate	13.1	10.2	12.0	13.2	12.1	12.0	13.8	12.4	12.6
Crude rate adjusted for age, sex and nonresidents	13.8	11.0	12.6	13.6	11.2	11.8	14.3	12.3	13.1

From the results of the table it was evident that the constants used for the estimation of the three fields making up the crude rate (obtained from the total registration area statistics), were based on a standard population for age and sex grouping. Variations then from standard population for such factors in units, whether state or city, would make our estimated total rate of yet greater value than previously realized. The component parts of the total estimated rate would then likewise participate and comparisons between cities would be self-corrective for the two most important factors concerned in the adjustment of crude rates and their component parts.

Objection may be offered to a manifestly empirical division of total estimated mortality rates into three fields, with, in the final analysis, an unknown content of what makes up each such field. The practical value to the epidemiologist, to the health officer or others interested may be said to lie beyond the submitted evidence that the theory is gained from statistics of mortality and fits the facts of completeness of recorded statistics as well as offering checks on their incompleteness. The opportunity of visualizing the continuance of, or the intermittency of progress in each of the three mentioned fields may, in the first place, be a worth while method of yearly comparison for any unit of population, whether state or city. In the second place, it is possible to show the relative values, yearly or by groups of years, of each of the three fields. Of yet greater future import there is concerned the question of whether the respiratory diseases may be not only better defined as to their individual and total content, but for that reason, better controlled. May it not be, for example, that the demarcation between filth-borne diseases such as typhoid, and the respiratory diseases such as pneumonias, will

eventuate in more rational control of the latter diseases? It is suggestive, as Pearl shows in correlation statistics of the factors influencing the explosiveness and excess of mortality of epidemic influenza, that alone of all so-called normal mortality variables, typhoid fever and cancer give evidence of zero influence.

It would seem not impossible from study along the lines indicated that the sanitary index, other than as indicated by the infant mortality rate, has ever been an indicator of progress against the filth-borne diseases, truly sanitary as relating to man's environs. There is brought into contrast the health index as used at this time, namely, influenza-pneumonia mortality rate. With advantage we offer then a third possible index, namely, that indicated by mortality rate for "all other diseases." It is reasoned by medical officers of health that, by reason of their cyclic frequencies, the respiratory diseases are not susceptible of definite control. Some see in the respiratory diseases the major portion of present day mortality. Others (and it may be for reason of lack of definition as to total individual such diseases), present personal hygiene, social and economic factors as the definite factors for control. Medical officers of health have regard for the fact that respiratory diseases pick out the personally fit. It would seem that a proper relation may be effected from consideration of the two operating fields of "respiratory" and "all other diseases" content.

How far do figures fit such a possibility? The following table records the statistics of recorded and estimated total mortality rates, the estimated respiratory and all other disease content of such total mortalities for the past four years for certain areas. Failing the U. S. Census Bureau's figures for "all other diseases" for 1921 and 1922 for the cities, comparison for that field of action is limited to the first two years. I have been accustomed to compare the statistics of this city with Bridgeport for the reason that the latter city has since 1915 developed a nationally known dental prophylactic work. I have used for comparison New York City for reason of their ever lower recorded mortality rates than have been recorded by Census Bureau figures (earlier explained by overestimated population, and of substandard population as regards age and sex). I have also been accustomed to use for comparison the statistics of the Metropolitan Life Insurance Company. Impressed with the possibility that lower rates could well be a measure of concealed statistics of rural versus urban rates, of unadjusted rates for age and sex, our system might well show much of value. Mindful then of the fact that the constants used to determine the figures for each field are apparently self-corrective for the factors of age and sex grouping, the table is worthy of close attention. At this time it may be well to recall the method of obtaining the estimated fields. The sum total of the mortality rates per 1,000 population from influenza, measles, whooping cough, tuberculosis of the lungs, and total pneumonias multiplied by the constant 2.6 represents the "respiratory" figure. The mortality rate for "all other diseases" multiplied by the constant 2.4 represents that specific field. The sum of the mortality rates for typhoid fever and infant diarrhea multiplied by the constant .06 represents the "filth-borne" disease field. The sum of the three fields constitutes the estimated total mortality rate.

Beyond the opportunity of directly comparing the variations of the different component fields whether for years for the same area or for the same year for varying unit areas, it would seem possible from the variations in the component fields that much to the advantage of public health could be elicited in the direct placement of the constituent parts of each field, facts no less unknown without such an empirical scheme as with.

To the practical health official, the use of graphs may appeal. Two graphs are illustrated. Graph 1 shows the record for New Haven for a period of years

CRUDE RECORDED (A) AND TOTAL ESTIMATED RATES (B)

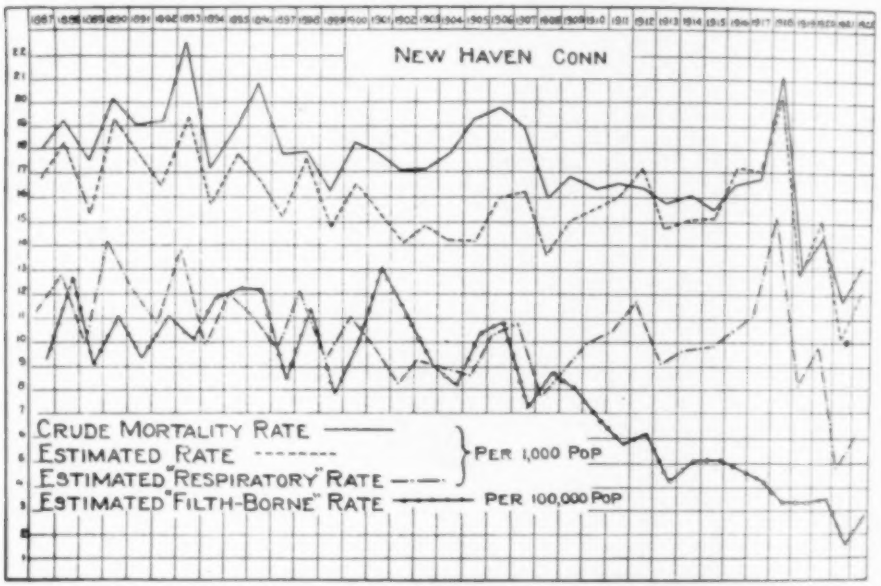
	1919		1920		1921		1922	
	A	B	A	B	A	B	A	B
New York City	13.3	14.4	13.0	13.8	11.2	12.4	11.0	12.[illegible]
New Haven	13.0	12.8	14.5	13.1	11.6	10.2	13.3	12.[illegible]
Bridgeport	14.0	14.3	12.8	13.2	10.5	12.1	11.1	12.[illegible]
Metropolitan	10.6	14.1	9.9	12.5	8.7	9.5	8.8	9.[illegible]

RESPIRATORY

	1919	1920	1921	1922
New York City	10.626	9.746	5.668	[illegible]
New Haven	8.130	9.792	4.712	7.[illegible]
Bridgeport	10.309	8.978	6.638	6.[illegible]
Metropolitan	9.422	7.766	4.919	6.[illegible]
				5.317

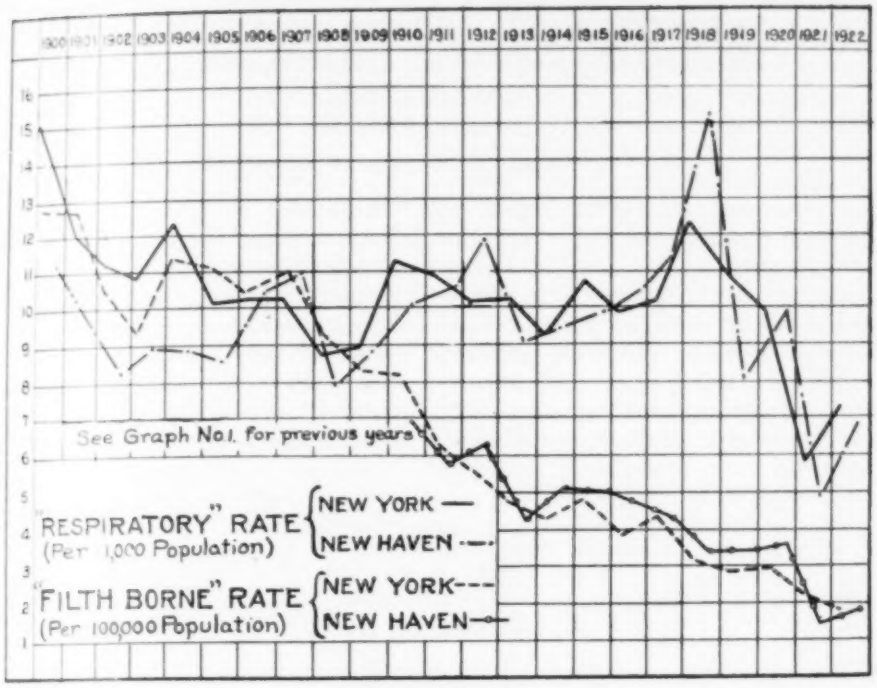
ALL OTHER DISEASES

	1919	1920	1921	1922
New York City	3.773	3.989	.....	.....
New Haven	4.594	5.311	.....	.....
Bridgeport	3.898	4.151	.....	.....
Metropolitan	4.644	4.738	4.572	4.[illegible]



GRAPH No. 1

recording contrasting curves of recorded crude and estimated total mortality rates (per 1,000 of population), the respiratory field (per 1,000 of population), and contrasting filth-borne field (per 100,000 of population). City year book statistics were used for the years 1887–1899 and 1921–1922. For the remaining years the statistics of the Census Bureau were used. Except for the years 1915-1920 the field "all other diseases" is represented by the figure 5.5 per 1,000 of population. Previous to 1915 (1900 on), the statistics of ill defined and unknown diseases figure large enough to make the rate given under "all other diseases" of less value. It will be observed that the close approximation of crude and estimated total mortality rates during 1915-1920 is as satisfactory as it is the reverse when "all other diseases" are represented by the figure 5.5. The historical epidemic of typhoid fever, water borne, 1900, and the trend of filth-borne diseases since is well shown. In sum, the representation of the three constituent fields, mindful of the fact that the filth-borne is magnified 100 times, furnishes an excellent picture of contrasting respiratory and all other disease fields. It would seem that in this city the epidemic of 1891–1893 began in 1888. Similar curves of other cities show that in a near by city in an adjoining state


1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922
See Graph No 1. for previous years
"RESPIRATORY" RATE (Per 1,000 Population)
NEW YORK
NEW HAVEN
"FILTH BORNE" RATE (Per 100,000 Population)
NEW YORK
NEW HAVEN

GRAPH NO. 2

the same phenomenon is true of the year 1887.

Graph 2 contrasts the "respiratory" and "all other disease" curves of this city and our metropolitan neighbor. The curve of filth-borne disease for New Haven had been omitted for the years preceding 1910 as making for less confusion and because it may be obtained from graph 1.

In sum, the attempt to work out a practical valuation of the different operating factors in crude mortality rates for comparing the relating health of cities, using mortality statistics from the point of view of a medically trained officer of public health, points to at least three health indices. From their verification and from further knowledge gained from the presenting angle, much of value in public-health administration would seem possible.

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EDUCATION OF SANITARIANS

The results of a circular to physicians and sanitarians sent out to approximately 13,000 individuals have been compiled by Dr. W. F. Draper, Assistant Surgeon General, United States Public Health Service. Physicians and sanitarians were requested to express their judgment and wishes regarding the proposed six or eight weeks public health institutes and 3,700 postcards have been returned.

Virtually all who replied believe that there is need for one or more such institutes, also that not only are employees of the health department and public health nurses interested, but practicing physicians as well. A very large majority believe that the institutes should be held at various medical centers in the United States instead of at Washington. Summer appears to be the season most favored. The Surgeon General's Committee is now proceeding to the formulation of definite plans for these institutes.

CHANGES IN MORTALITY IN THE LAST TWO DECADES IN NEW ENGLAND, NEW YORK, NEW JERSEY, MICHIGAN, INDIANA, AND THE DISTRICT OF COLUMBIA

ELBERTIE FOUDRAY

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IN HIS very interesting paper[1] on *Changes in Longevity of Americans in the Last Decade*, Dr. C. H. Forsyth uses death rates based on the number of deaths in the calendar years 1900, 1910, and 1920 in which the censuses were taken. Table 1 shows that the mortality conditions in all these years were very unfavorable when compared with those in the years immediately preceding and following them.

According to Table 1 rates based on deaths during these periods should represent the *trend* in mortality in the last twenty years fairly well, although it is a little too soon to decide concerning the period 1919–1920. Doubtless the World War and the influenza epidemic removed a number of people during 1917 and 1918 who under normal conditions would have died a few years later. However, there were influenza epidemics during the early parts of 1919 and 1920. To these epidemics some of the peculiarities in the life table values for 1919–1920, pointed out later on, are probably due. Three-fourths of the big drop in the number of deaths between 1920 and 1921 is due to the decrease in the number of deaths from influenza, pneumonia, and tuberculosis during these two years. Whether the very low death rate in 1921 is to any great extent an after effect of the high rates in the years preceding it, can be determined only from the rates in the

TABLE 1

Populations according to census returns and the number of deaths by sex and year of death in the death registration states[2] of 1900 from 1900 to 1921

Calendar Year	Males		Females	
	Total Population	Number of Deaths[2]	Total Population	Number of Deaths[2]
1900	9,986,649	179,016	9,974,093	164,201
1901		174,867*		157,336*
1902		168,639*		149,997*
1903		172,623*		154,672*
1904		184,991		164,564
1905		183,085		162,775*
1906		188,531		165,375
1907		196,222		170,436
1908		186,621		164,542
1909		188,197		165,379
1910	12,132,053	201,173	11,913,527	175,842
1911		196,681*		171,406*
1912		195,234*		168,385*
1913		201,161*		171,734*
1914		199,534*		171,907*
1915		200,397*		173,308*
1916		214,855		182,843
1917		219,363		184,143
1918		278,218		238,360
1919		194,996*		179,617
1920	14,071,069	200,231*	13,907,340	188,377
1921		179,468*		167,887*

[2] The death registration states of 1900 included New England, New York, New Jersey, Michigan, Indiana, and the District of Columbia.

[2] The asterisk indicates that the number of deaths is lower than in the calendar year of the preceding census.

The rates of mortality and the complete expectations of life in Tables 2 and 3, respectively, are based upon deaths among the *white* population in the death registration states of 1900 or the original registration states, as they are called. Each table is based upon the deaths in two or more consecutive years as follows:

Life tables for 1901 on deaths in the three year period, 1900–1902.

Life tables for 1910 on deaths in the three year period, 1909–1911.

Life tables for 1919–1920 on deaths during this two year period.

1. *Science*, March 23, 1923, p. 345.

years that follow it. It will be noted that the number of deaths among males in 1921 is only slightly greater than that in 1900 although the population had increased over 40 per cent.

As pointed out by Dr. Forsyth, there is a decrease between 1910 and 1920 in the rate of mortality at each age given except for females at ages between twenty-two and thirty-two years. See Table 2.

An examination of the death rates by cause shows that the rate from influenza and pneumonia in 1919 and 1920 was from two to three times that in 1910 for males between fifteen and forty years of

TABLE 2

Age	Rate of mortality per 1,000	Difference	1910	Difference	1919-1920
			Males		
[illegible]		−10.2	123.3	−30.9	92.4
[illegible]		−6.3	28.2	− 9.4	18.8
[illegible]		−3.1	12.7	− 3.6	9.1
[illegible]		−0.3	2.3	0.0	2.3
[illegible]		−1.3	5.4	− 0.4	5.0
[illegible]		−1.2	7.3	− 0.4	6.9
[illegible]		−0.2	11.0	− 1.9	9.1
[illegible]		+ 0.1	17.2	− 2.3	14.9
[illegible]		+ 2.6	35.4	− 4.9	30.5
[illegible]		+ 3.7	72.3	− 3.0	69.3
[illegible]		+ 2.9	158.3	− 7.5	150.8
			Females		
[illegible]		− 8.3	102.3	−28.7	73.6
[illegible]		− 5.4	25.8	− 8.9	16.9
[illegible]		− 3.4	11.4	− 3.2	8.2
[illegible]		− 0.4	2.0	− 0.1	1.9
[illegible]		− 1.5	4.7	+ 0.7	5.4
[illegible]		− 1.6	6.5	+ 0.4	6.9
[illegible]		− 1.2	8.6	− 0.8	7.8
[illegible]		− 0.8	14.2	− 0.8	13.4
[illegible]		+ 1.3	30.0	− 2.5	27.5
[illegible]		+ 3.3	66.3	− 2.3	64.0
[illegible]		+ 7.9	149.1	− 9.7	139.4

age, and from four to five times that in 1910 for women in the same age period. The effect of the influenza epidemic upon women bearing children is indicated by the low birth rates of 1919 and 1920 and by the high mortality among women from diseases connected with childbirth. Also, there was a drop from 1910 to 1920 in the number of deaths among males from violence and alcoholism, but no corresponding decrease in the death rate among women from these causes. The net result was a lowering of the death rates among men from twenty to forty years of age between 1910 and 1920 and an increase among women in this age interval between 1910 and 1920.

At ages seventy-five years and over the death rate decreased between 1910 and 1920, dropping from 150 to 145 per 1,000 male population and from 141 to 138 per 1,000 female population. As the changes in rates for both males and females are in general similar, an analysis of the changes in the male rate is sufficient here. During this ten year period death rates for males seventy-five years and over, due to the following causes, increased: cancer, diabetes, cerebral hemorrhage and softening of the brain, organic diseases of the heart and diseases of the arteries, atheroma, aneurysm, and acute nephritis and Bright's disease, the whole group showing an increase of 1,841 per 100,000 population. However, the following de-

TABLE 3

Complete expectation of life in years

Ages	1901	Difference	1910	Difference	1919-1920
			Males		
0	48.2	+ 2.0	50.2	+ 3.9	54.1
1	54.6	+ 1.7	56.3	+ 2.2	58.5
2	55.5	+ 1.4	56.9	+ 1.7	58.6
12	48.9	+ 0.7	49.6	+ 1.4	51.0
22	40.7	+ 0.4	41.1	+ 1.6	42.7
32	33.4	− 0.1	33.3	+ 1.6	34.9
42	26.3	− 0.3	26.0	+ 1.3	27.3
52	19.4	− 0.4	19.0	+ 0.9	19.9
62	13.2	− 0.3	12.9	+ 0.5	13.4
72	8.1	− 0.1	8.0	+ 0.2	8.2
82	4.54	+ 0.02	4.56	− 0.03	4.53
			Females		
0	51.1	+ 2.5	53.6	+ 2.8	56.4
1	56.4	+ 2.3	58.7	+ 1.2	59.9
2	57.2	+ 2.0	59.2	+ 0.7	59.9
12	50.4	+ 1.4	51.8	+ 0.2	52.0
22	42.3	+ 1.0	43.3	+ 0.3	43.6
32	35.0	+ 0.4	35.4	+ 0.7	36.1
42	27.7	0.0	27.7	+ 0.7	28.4
52	20.5	− 0.2	20.3	+ 0.5	20.8
62	14.0	− 0.3	13.7	+ 0.3	14.0
72	8.6	− 0.1	8.5	+ 0.2	8.7
82	4.9	− 0.1	4.8	+ 0.2	5.0

creases in death rates for males seventy-five years and over between 1910 and 1920 should be noted: a decrease of 101 per 100,000 population assigned to ill-defined causes, 207 per 100,000 assigned to paralysis without cause, and 842 per 100,000 assigned to senility. Other diseases showing for males seventy-five years and over much lower death rates in 1920 than in 1910, are pneumonia (all forms), nonvenereal diseases of the genito-urinary system and annexa other than acute nephritis and Bright's disease, diseases of the stomach other than ulcer and cancer, diarrhea and enteritis, influenza, dysentery, gangrene, tuberculosis, pulmonary congestion and pulmonary apoplexy, and typhoid fever, giving a decrease of 938 per 100,000 for this entire group.

While the increase in complete expectation of life at ages under three years was greater for females than for males between 1901 and 1910, the reverse is true between 1910 and 1920. For both males and females there is a greater increase in the complete expectation of life at birth between 1910 and 1920 than between 1901 and 1910.

TABLE 4

Death rates per thousand population in the death registration area of 1900

Calendar year	Males, all ages	75 years and over
1900	17.9	145.9
1902	16.2	134.6
1909	15.7	141.7
1910	16.6	150.0
1912	15.5	144.4
1917	16.2	152.5
1920	14.2	145.0

Populations for 1902, 1909, 1912, and 1917 were estimated by assuming that the population changed according to arithmetic progression. It is safe to assume that the population in these death registration states (which amounts to one-fourth of the population of the United States and receives nearly one-half the immigrants) did not at any time decrease. The fluctuations in death rates from year to year, as indicated by the approximate rates in Table 4, are about as great as the increase or decrease in the death rates over a period of years. In fact, a study of single years does not in all cases show the dominant trend. For example, the rates of 1902, 1909, and 1917, if studied alone, show no improvement, whereas the rates in 1900, 1910, and 1920 *happen* to show the same downward trend revealed by life table calculations covering groups of years.

□

PRELIMINARY STUDIES OF THE FAUNA OF THE IMHOFF TANK[1]

LEON AUGUSTUS HAUSMAN, PH.D.

Rutgers College, New Brunswick, N. J.

PRELIMINARY studies of the faunal community found in the Imhoff tank of the Plainfield, North Plainfield, and Dunellen, N. J., sewage disposal plant, superintendent, Mr. J. R. Downes, have revealed some interesting relationships. The work just mentioned was begun in October, 1922, and it is planned to carry the investigation forward until the exact nature of the effect of the living organisms found in the various units of the plant on the sewage is known. The work of the past (1922), present, and the projected work of the future is here given in outline to afford some idea of its general trend, and objectives.

I. Census, month by month, and for three levels of the filter bed, of the animal forms found, and their relations to the temperature, season, sloughing periods and quality of the final effluent, etc. (Carried on in 1922 by Crozier and Harris.[2])

II. A study of the character of the effects produced on the sewage, and on the film of the stones over which it flows, by the host of protozoa and other minute animal forms found in the film, with especial reference to *Opercularia*, and Nematode worms, the two dominant organisms of the filter film (now being carried on).

III. Census, month by month, of the animal population of the Imhoff tank, and of the Imhoff influent and effluent sewage (now being carried on).

IV. Studies of the work being done in

1. Paper No. 125 of the JOURNAL series, New Jersey Agricultural Experiment Stations and New Jersey State Department of Health. Substation, Sewage Investigations.

2. Crozier and Harris, The Animal Population of a Sewage Sprinkling Filter. Preliminary Account (in manuscript).

the Imhoff tank by the animal inhabitants occurring therein (now being carried on).

V. Laboratory studies of the exact physiological and chemical changes wrought in sewage by the various types of animals living in the different purification units of the plant (to be undertaken in the near future).

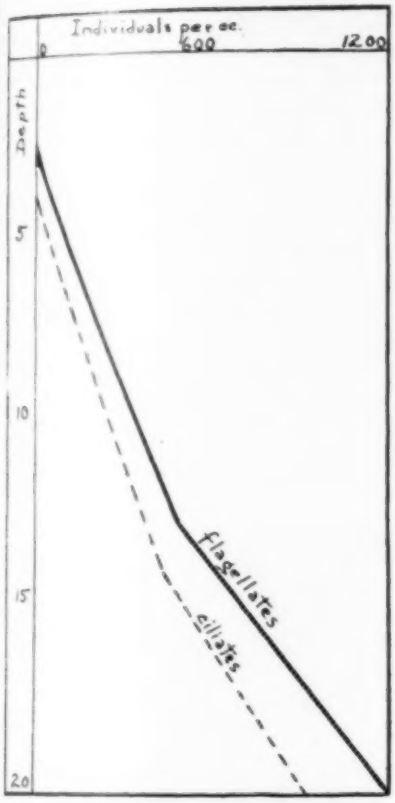

Fig. 1.
Depth succession of the dominant protozoa of the Imhoff Tank in numbers of individuals per c.c.

It is hoped that by these studies a more accurate knowledge of the biological changes carried on by animal organisms in sewage disposal plants may be obtained, which may, when correlated with the work being carried on by the New Jersey sewage substation, aid in securing more effective, or less costly, disposal plant operation. The members of the investigational group just mentioned are engaged not only in the study of the animals of the Plainfield plant, but also of the bacteria, plant forms (*i.e.*, water molds, algæ, fungi, etc.), and of the chemical changes taking place in the various purification units. A correlation of these various studies, it seems reasonable to suppose, can hardly fail throwing some light on features of sewage purification but now little understood.

FAUNA OF THE IMHOFF TANK

Samples taken periodically now extending over a term of six months have shown that the Imhoff tank contains a relatively stable population composed of the minuter forms of the protozoa (the mastigophora, or flagellates). The samples examined were secured from the zones of the scum, intermediate liquid, and the sludge in process of digestion, and the organisms tabulated with regard to kind, distribution, and numbers of individuals per cubic centimeter of the material examined. The results of these analyses are shown in Fig. 1.

The minute flagellates, in dimensions less than 30 microns (1 micron equals 1/25400 of an inch) are the predominant forms of animal life, and fluctuate somewhat in numbers with respect to the acidity of the contents of the tank. Fig. 2 shows the characteristic body forms of

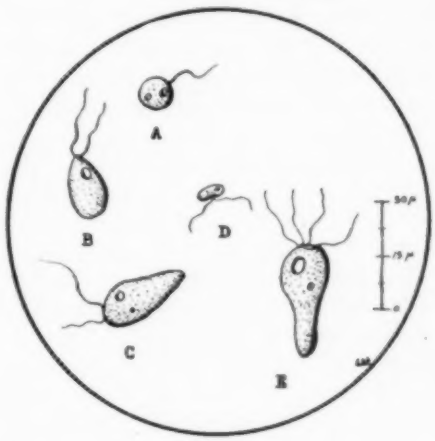

Fig. 2.
Five typical representatives of the dominant flagellate protozoan group occurring in the Imhoff influent, effluent, and tank. A. *Monas sp.*, B. *Dinomonas vorax*, C. *Physomonas sp.*, D. *Pleuromonas jaculans*, E. *Tetramitus variabilis*. The scale is in microns (1 micron=1/25,400 of an inch).

typical genera of these forms, which occur apparently without any *specific* distribution throughout the scum, liquid, and sludge.

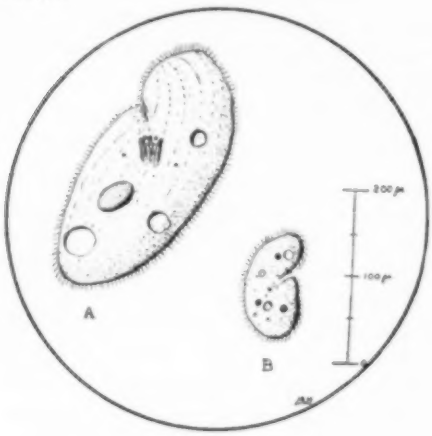

Fig. 3.

The dominant ciliate protozoa of the Imhoff influent and effluent. A, *Chilodon cucullulus*. B, *Colpoda sp.* The scale is in microns (1 micron = 1/25,400 of an inch).

The ciliate protozoa are found in fewer numbers, and are relatively much less stable in their monthly occurrence than the flagellates. Fig. 3 shows the two predominant forms of Imhoff ciliates. The larger, *Chilodon cucullulus* (A, Fig. 3) is the largest form found in the tanks, and sometimes reaches a length of 250 to 300 microns.

In the study of these forms the comparison ocular (Fig. 4) has proved most useful. By means of this device two microscopic preparations can be brought together into the same field of vision, side by side, and under the same conditions of magnification and illumination, for delicate comparisons. The uses of such a device for the comparison of known and unknown elements in samples, for micro-measurements, and for the comparison between treated and untreated samples, will be at once apparent.

At the beginning of the work on the biology of the Plainfield plant several questions presented themselves: (1) what kind of organisms are to be found in the Imhoff tank? (2) how are these distributed in the tank? (3) what work are they doing in the material where they occur? (4) is the character of this work such as to warrant attempts to increase or to decrease their numbers in the tank? (5) how can their increase or decrease be brought about, and is it worth the cost? (6) or are these forms merely present as a neutral element in the operation of the tank, and simply rise and fall in numbers with the abundance and diminution of their food supply?

The first two questions are practically answered. It is hoped that the remaining ones may be so soon. Whatever knowledge is gained cannot be a hindrance to the intelligent operation of a disposal plant. The investigators hope that it may be of some solid aid. So vast a number of active organisms which have been found in the Imhoff tank must be doing a considerable amount of work, *i.e.*, effecting some change in the medium they inhabit. The study of the nature of this change forms the second part of the investigation.

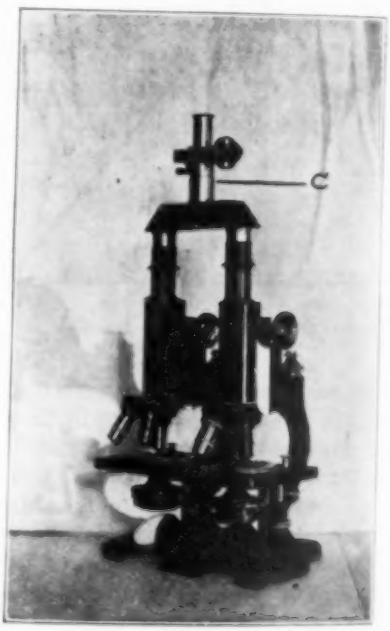

Fig. 4

Comparison ocular (C) fitted to two microscopes for the delicate comparison of two separate preparations.

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THE DEATH OF ARTHUR LOOSS

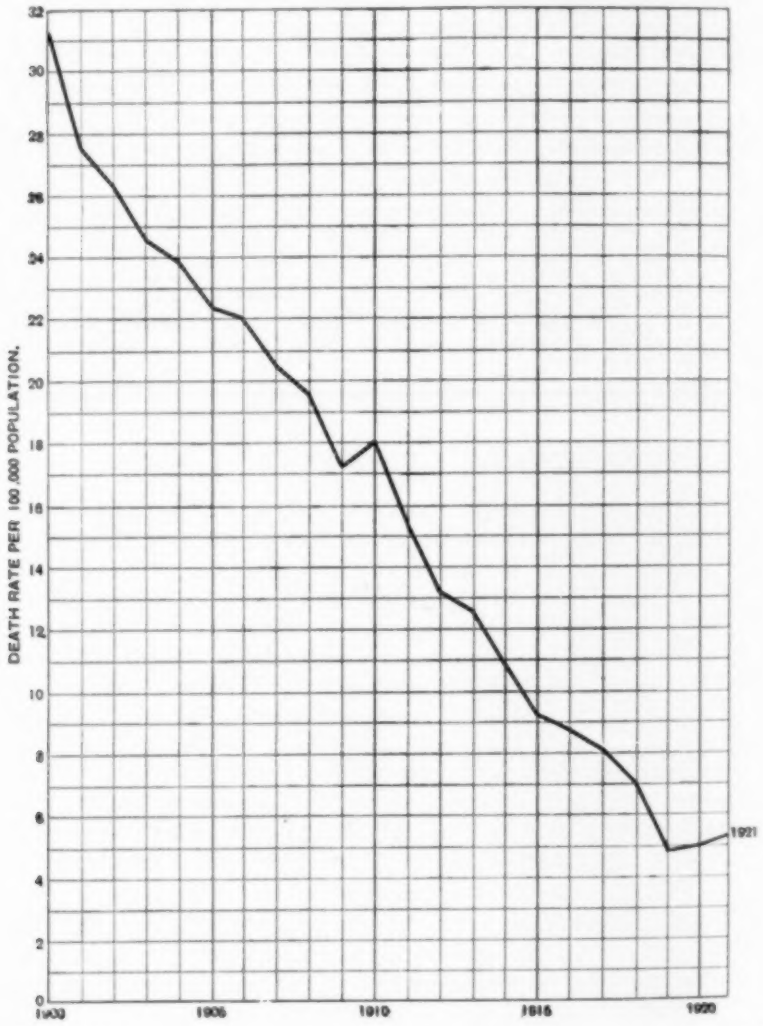
The European papers announce the death of Arthur Looss after a long illness on May 4, 1923, at Giessen. He was born on May 16, 1861, at Chemnitz, and received his early education in his native city and at Lodz in Poland. He afterwards studied at the University of Leipzig, and in 1885 received the degree of doctor of philosophy, his thesis being on the Trematodes. He was sent by Leuckart to Egypt to study the transmission of bilharzia. While there he became interested in hookworm and owing to an accidental infection of himself made the discovery of the ability of this larval worm to penetrate the skin. The larvæ are then carried to the heart and lungs and finally reach the intestinal tract from the trachea. He wrote two volumes on the anatomy and life history of the hookworm which were published in the records of the Government School of Medicine. He was for many years professor of parasitology and biology at the School of Medicine in Cairo. He continued his work until after the outbreak of the World War when he retired from his chair and returned to Germany.

While Looss gave his entire life to the study of helminthology, and made many notable contributions to the medical branch of this subject, for us in America his chief work will always be his demonstration of the method of infection in hookworm, which is found in such a large portion of our southern countries and in the islands which are under our control. The infection is world-wide in tropical and subtropical climates. Stiles estimates that two million individuals are infected between the Potomac and the Mississippi Rivers. The discovery of the mode of infection pointed the way to prevention of the disease. The results obtained by Ashford in Porto Rico and Stiles in America have demonstrated the value of this discovery. Looss made for himself a name as one of the most distinguished of helminthologists and put the world under a debt of gratitude to him. M. P. R.

TYPHOID FEVER DEATH RATES

The trend of annual death rates from typhoid fever is an excellent measure of the progress of public-health work. The story told by the following graph is, therefore, most gratifying:

DEATH RATE FROM TYPHOID FEVER PER 100,000 POPULATION IN THE REGISTRATION STATES OF 1900



1900	31.3	1911	15.3
1901	27.5	1912	13.2
1902	26.3	1913	12.6
1903	24.6	1914	10.8
1904	23.9	1915	9.2
1905	22.4	1916	8.8
1906	22.0	1917	8.1
1907	20.5	1918	7.0
1908	19.6	1919	4.8
1909	17.2	1920	5.0
1910	18.0	1921	5.3

These rates are for an area of ten states and the District of Columbia commonly known as the "Original Registration States," which is the largest area for which comparable rates since 1900 can be shown. A reduction in the typhoid fever death rate in this area from 31.3 per 100,000 population to 5.3 since 1900 is truly remarkable. However, lest these states become too puffed up with a feeling of public-health efficiency, it may be well to note that the typhoid fever death rate in England and Wales has declined from 17.3 in 1900 to 2 in 1921.

In 1921 the death registration area related to 34 states, the District of Columbia, and 17 cities in nonregistration states, or 82.2 per cent of Continental United States, and the typhoid mortality rate for the entire area was 9. Ten of these states, of which 5 were in the group "original registration states," had typhoid death rates below 5 per 100,000 population, but on the other hand 3 had rates above 25, so that there is still plenty of room for public health progress.

Tennessee had the highest rate (26.1) and Rhode Island the lowest (2.8). Moreover, the high rate for Tennessee is not to be charged wholly to the colored population, for the rate for the whites of Tennessee was 22.5 against 41.5 for the colored.

Of the 66 cities of 100,000 population or more in the registration area, Nashville in 1921 had the highest typhoid death rate (21.3) and Chicago the lowest (1.2).

As a fitting climax to these figures, attention should be called to the statement in a recent issue of the *Journal of the American Medical Association* that in 1922 no deaths from typhoid fever occurred in the large cities of Providence, New Bedford and Yonkers. W. H. D.

BAKING TECHNOLOGY

One of the most interesting publications which comes to our desk is *Baking Technology: A Journal of Applied Science in Baking*, published by The American Bakers Association, which the editor has been good enough to send for some months.

The activities of this Association are far reaching. Research fellowships have been endowed by commercial corporations putting out food products, as for example the Merrell-Soule and the Sunmaid Raisin companies. Experts of the highest class are employed by them in the elucidation of problems connected with the baking industry. Foods, especially those in which the grains play a large part, are studied through their entire range. The various wheats, milling processes, flours, yeasts, milks, dried milks, oils, butter, butter substitutes, fats and in fact everything which enters into the making of bread, cakes, pies, etc., are carefully studied under experts. It is a well directed and earnest effort toward improving the products of the baker. Not only is the technical side brought out but he is taught the scientific reasons underlying the best practices of his trade.

Some of the figures presented are rather startling to the casual observer. Bread has well been called the staff of life and is the most universally consumed food in the world. The number of interests which are concerned directly and indirectly in the baking trade is surprising. Not only are the farmers of the country intensely interested but the dairymen, milk dealers, cotton growers and cotton seed oil manufacturers, sugar growers and manufacturers, raisin and fruit growers and packers, manufacturers of various types of shortening, the packing industries, all are vitally interested in the amount of bread which the people of the country eat. Indirectly almost everyone in the world is concerned.

The matter of health has not been forgotten by the directors of the Bakers

Association and the research laboratories of the American Institute of Baking. They are teaching sanitary methods in construction of shops and machinery, the handling of doughs and the various ingredients which go into bread. They study and teach the bakers of the country the facts concerning the nutritive value of the ingredients as well as of the finished product, the influence of various temperatures, the use of steam, the cooling, wrapping and protection of bread, the proper handling of bread in shops and groceries, and the influence of molds and various bacteria.

One has only to look over the table of contents of a few of these journals to realize the enormous importance and range of subjects considered in Baking Technology. A recent number contained a most interesting paper on how rust curtails the production of wheat, the rôle of the barberry in spreading this destructive plant disease, and the fight against it in various countries. The capital involved from the farm to the finished product runs up into figures which stagger the imagination.

While the journal is technical and intended primarily for bakers, it contains material of intense interest for health officers, physicians and all who are interested in the nutrition of our people. M. P. R.

THE DEATH RATE FROM TUBERCULOSIS DECLINES

A decline in the death rate from tuberculosis has been noted in many parts of the world but the cause of this decline is not evident. The Metropolitan Life Insurance Company has shown that amongst its white male wage-earners the death rate has fallen 59 per cent in 11 years, and what is almost more important, that the age of death has advanced 6 years. In 1911 it occurred at the average age of 38.8 years, in 1921 at 44.8 years. In England, where more nearly correct statistics have been kept longer than in the United States, we find that the death rate from tuberculosis in 50 years has been reduced more than 50 per cent, the fall acting continuously and at an increasing rate. Sixty years ago the death rate in England was approximately 3,300 per million, while in 1910 it had dropped to 1,500 per million. The last returns show that this progressive fall is continuing, and Gossel expresses the optimistic opinion that if the decline continues at the same rate which it has held for the past 60 years, in 30 years, or by 1953, tuberculosis will be a very rare disease.

From the public health standpoint all this is good, but as far as the direction of our efforts for the future is concerned the definite cause should be ascertained. Some hold that the discovery of tubercle bacillus and the introduction of sanatorium treatment have had no obvious effect on the death rate, though they have played their part in common with other factors in bringing about the desirable results. Many point to what they call the "amelioration of social conditions" as the great reason for reduction in the death rate, and it is easy to see that the marked improvement which took place in England through the efforts of Sir John Simon and Chadwick coincides fairly well with the lessening mortality from tuberculosis. The weak point in this argument is the lack of reliable statistics previous to their time. Gosse believes that the chief factor is the steadily increasing segregation of consumptives, even though complete segregation seldom lasts longer than six months, and in many thousands of cases not more than three. The education acquired in a sanatorium is, however, carried into the home, and may be considered as a direct result of the residence in these institutions. Segregation of all consumptives is impracticable, and the most that can ever be hoped for is that the

worst cases can be isolated, and others trained to protect the community from themselves.

A very interesting question always arises when we consider the spread of tuberculosis, namely, the age period at which infection usually takes place. For some years past there has been a growing belief that infection takes place, in the vast majority of cases, in early life, and that the development of phthisis in adult life is the awakening of this early infection which remains latent until some untoward incident renders the tissues of the body vulnerable by breaking down immunity. However, some striking cases of what seem to be almost certainly adult infection have been reported. For example, three young girls, seventeen to nineteen years of age, took turns of one a week at a time in sleeping with their employer, who was a dressmaker suffering from consumption, and who died during their apprenticeship. In less than two years these three girls had all died of phthisis although the family history of each was good. In another case, seven fishermen from the Shetland Islands occupied a cabin 14 feet square by 6½ feet high. Five of the men were well known by the local physician and were in good health. Two were strangers, one of whom suffered from cough and expectorated. In approximately two years, four of the known men had died of tuberculosis. The captain remained well as far as is known. The history of the two strangers was not obtained with certainty but it was reported that both of them had died of lung trouble.

The study of conjugal tuberculosis has thrown light on adult infection in the past. Recently an excellent monograph by Dr. Roussel[2] has appeared from which the following facts are taken. Of 423 families in which one or both of the couple were tuberculous, in 49 both partners suffered from consumption. In 27 of these the possibility of conjugal infection could be dismissed, leaving 22 to be explained. Of these direct contagion appeared to be certain or highly probable in 14, and possible in the remaining 8. Fifteen of these 22 cases were not active and in only 4 out of the entire 423 couples did a rapid type of the disease result. In 18 of the 22 the infection was from husband to wife, and the length of married life before the disease manifested itself was six months to twelve years, while in four cases the disease was not noticed until after the death of the infected partner. These cases occurred among the poorer classes at Nancy, and demonstrate the rarity of conjugal infection even under adverse conditions. The length of time supervening before evidence of the disease in some of these cases throws doubt on the source of infection, and the whole study tends to show the comparative infrequency of adult infection. From the public health standpoint there is serious objection to the marriage of tuberculous persons on account of the high rate of infection seen in the children of consumptives.

While we cannot accept entirely the conclusions reached by some recent writers it is evident that the methods employed at the present time are producing good results. Among these may be enumerated especially segregation, teaching habits of cleanliness in the disposition of sputum and other excreta, and the improvement of the sanitation of factories, places of public resort and home, especially those of the poor. In this connection it must be urged on the general physician that the detection of tubercle bacilli in the sputum is a late diagnosis. Belief that this is the only certain diagnosis and should be waited for before declaring a person consumptive has sent many thousands to an untimely grave.

M. P. R.

1. Public Health Aspects of Pulmonary Tuberculosis. A. Hope Gosse. Journal of State Medicine, May, 1923.
2. La Tuberculose Conjugale; Contagion and Marriage. Paris: A. Maloine et Fils.

BACTERIOLOGICAL ANTAGONISMS

Since the early days of bacteriology the idea of antagonism between bacteria in the body has cropped up from time to time and methods of treatment or cure have been proposed based on these supposed antagonisms. Bouchard, Emmerich and others showed years ago that the streptococcus taken from cases of erysipelas would prevent a fatal result in guinea pigs inoculated with anthrax. It was also found that the same thing could be done by using the pyocyaneus and the prodigiosus. Inoculation with the streptococcus was tried as a cure for carcinoma and cancer on account of the improvement noted in cases of cancer after a spontaneous attack of erysipelas. The bacterium termo, so called, was even suggested as a cure for tuberculosis on account of its apparent antagonism to the growth of the tubercle bacillus in culture. For a number of years Coley has used and advocated certain bacterial products for the cure of inoperable tumors. To lay people the idea of putting a good organism into the body to hunt out and conquer an injurious one has appealed strongly, and as demonstrated by what has just been said physicians and bacteriologists have not been entirely free from the same illusive idea.

In medicine apparent antagonism between certain diseases has also been noted. Gonorrhea is often cured by the supervention of frank pneumonia; rodent ulcer sometimes heals after an attack of erysipelas, and carcinoma is less frequent in the tuberculous than in the nontuberculous (Lubarsch).

The most recent idea along these lines, which however brings in the interesting and unsettled question of the rôle played by fever in disease, is the inoculation of paretic patients with the parasites of malaria and relapsing fever. Among the early experimenters along this line was von Jaurreg.[1] His earlier experiments, begun about 1887, were with tuberculin, which was given for the purpose of producing a febrile reaction. He claimed as a result of this treatment that the tuberculinized paretics lived considerably longer and showed more lasting remissions than those untreated, and that some cases, first reported in 1919, still retained their full capacity for their regular occupation in 1921.

In producing malaria the blood of a malarial patient is injected. The patient thus infected is allowed to have a number of chills before being treated with quinine. The treatment is said not to be at all dangerous to life, and it is claimed that the results are more satisfactory than from any other form of treatment which has been so far tried. The treatment is quite widely employed throughout Germany at the present time. Up to 1921 von Jaurreg states that he had inoculated 200 paretics, in more than 50 of whom complete remission occurred, so that they were able to resume work and most of them able to take up their former occupations. Weygandt also speaks highly of the treatment, having used it in 150 cases. A large percentage of remissions followed which were longer and better than those obtained by other methods. Many of them kept under observation for 18 months following the treatment were still in excellent condition.

Just how this nonspecific therapy produces its results is not clear, but if the experiments quoted can be confirmed by further and more prolonged observation, a distinct step forward will have been made and hope can be held out for the unfortunate sufferers from this terrible and widespread disease. M. P. R.

1. Boston Med. & Surg. J., Vol. 188, No. 17, p. 635.

THE SPAHLINGER TREATMENT FOR TUBERCULOSIS

In England there is a good deal of excitement over the status of the Spahlinger treatment for tuberculosis. In Parliament queries have been directed from the floor asking why the government does not take the matter up. In this country also much interest has been aroused. On the one hand there is testimony as to the almost marvelous effects of Spahlinger's methods while on the other there are adverse criticisms.

On the authority of the *Lancet*[1] it can be stated that the Ministry of Health of England is prepared to actively encourage an experimental trial of Spahlinger's remedies under scientific supervision, and the British Red Cross has voted the sum of 30,000 pounds,—normally approximately $150,000,—to enable Spahlinger to produce his remedies on a sufficiently large scale that they may be tried out in England. The *Lancet* states that the matter has "reached a stage which would be comic were it not so supremely tragic." From the various letters pro and con, editorials, and from one article from Mr. Spahlinger himself[2] the following facts may be stated: Mr. Spahlinger is not a physician. For ten years past he has been Director of the Bacterio-Therapeutic Institute near Geneva, which is fully equipped with the most recent apparatus for research. An experimental farm is attached and the whole plant is one which would reflect credit on any university.

His method of treating tuberculosis includes passive and active immunization. In acute cases, passive immunization or serum treatment is mostly used. He believes that the different symptoms are not due to one toxin but to several, each of which he employs in the preparation of a "partial" serum. The production of these toxins in cultures is "stimulated" at definite intervals by physical and chemical means. He makes three "partial" antituberculosis sera: "1. Antitoxins, obtained by means of several ectotoxins secreted by Koch's bacilli in the culture medium. 2. Antiendotoxins, obtained by means of poisons derived indirectly from the bacillary bodies. 3. Antibacterial sera, obtained by injecting a horse first with dead and then living microbes, the animal having been previously submitted to a long progressive and intense vaccination. The proportion of these three types of antibodies present in the combined serum varies according to the type of case under treatment." The treatment appears to be quite complicated and requires several months, generally not more than six. In advanced cases there is a course of vaccinations followed by a period of rest, and in some a secondary or complementary antigen treatment is required in order to complete the recovery.

Mr. Spahlinger's written statement is hard to follow. He gives only an outline couched in general terms with no details of the methods employed, and one might even be led to believe that he does this purposely, especially in view of his apparent unwillingness to have independent experiments carried out elsewhere.

He claims remarkable results in the prevention of tuberculosis in the lower animals, including cows. Cows vaccinated in 1916 and then injected with large quantities of virulent bovine tubercle bacilli were killed in successive years up to 1921 and found to be free from tuberculosis. Four are said to be still alive and in good health.

Many distinguished scientific men have visited his institute and have been impressed by his laboratory and methods. Spahlinger has agreed to furnish our Public Health Service with enough materials to carry out clinical and experi-

1. The Lancet, January 7, 1922, p. 5.
2. The Lancet, February 17, 1923, p. 343.

mental tests. This promise, made in the fall of 1922, has not yet been carried out. From notes seen in foreign medical journals this is apparently the condition in which the treatment stands in other countries also. The *Lancet* does not believe that the treatment has yet reached the stage of proven value and none of his experiments in treatment appear to have been carried out under exact conditions. Cures have been reported and a number of letters have appeared from physicians in England and in Switzerland speaking of good results obtained. Practically the same thing can be said of every treatment which has ever been proposed for tuberculosis.

It is claimed that Spahlinger's work was interrupted by the war and that he is financially embarassed and unable to carry on his work. Appeals are being made for funds to enable him to produce his material on a large scale. The *Lancet* appeals to him in the name of humanity to submit his methods to independent investigation. Up to the present time he seems never to have given his complete methods to the scientific public.

In view of what tuberculosis means to humanity we must hope that Spahlinger has at last discovered a remedy which is efficient, but it would be a remarkable thing if a nonmedical man who cannot carry out his own clinical experiments should make such a discovery. Spahlinger impresses some of his visitors as being sincerely desirous of putting his remedies at the disposal of mankind, but up to the present time there is no evidence that he is willing to do this in what is considered the proper scientific spirit. We can only hope for the best. M. P. R.

POLITICS IN HEALTH MATTERS

Just while we were rejoicing at the action of the city of Savannah in taking her health affairs out of politics there came two blows from Western states, one of which has been considered in the front rank of the progressives, and has been singularly free from the malign influence of politics for many years. For a long time Kansas has had the enlightened services of Dr. S. J. Crumbine as health officer. He has introduced many reforms and his department has been regarded as a model. Governor Davis made an attempt to remove the old Board of Health, known as the appointees of ex-Governor Allen. For a time the two boards of health were attempting to function. The matter has finally been decided by the Supreme Court of the state in favor of the old board. However, Dr. Crumbine is no longer health officer and has been succeeded by Dr. Nyberg of Wichita. Evidently some brands have been saved from the burning but it is far from comforting to have an officer who has served with real efficiency for many years replaced under any circumstances except through his own volition.

In Oklahoma charges have been made that a certain monopoly exists by means of which the people of Oklahoma pay almost twice as much for biologicals as are charged in some other states. The State Medical Association has called on the Governor to make an investigation. It is claimed that a certain wholesale biological house has sent to the State Commissioner of Health every month a check for $50, presumably in return for favors granted. The present Commissioner of Health has returned these checks and advised the firm that all checks pertaining to his department should be made payable to the State of Oklahoma.

It may be true, as some of our distinguished members have held, that politics is necessary in health matters but the type of politics which is indicated by the

story which comes from Kansas particularly can only lead to harm. Health officials should be sure of support from the higher officers of the state and should be able to count on a secure tenure of office without interference by politicians of the baser sort.

M. P. R.

NOTHING NEW UNDER THE SUN

If the average doctor were asked to name some essentially new and modern ideas concerning the reaction of the body to outside agencies, it is probable that many would at once think of those which the study of immunity has brought to our knowledge, and among these none seem more remarkable than the specific and nonspecific hypersensitiveness so often met with.

It seems possible, however, that as early as 1552, Cardan[1] had observed the effect of hypersensitiveness against goose feathers in the causation of asthma and applied his knowledge in treatment with success. John Hamilton, Archbishop of St. Andrews, Edinburgh, was forty years of age in 1552, and for ten years had suffered from asthma. In spite of treatment by eminent physicians, he grew worse, and finally called to his aid Jerome Cardan, professor of medicine at Pavia, the most noted physician of Europe. For forty days after his arrival he did not begin treatment, but allowed the Archbishop's physician to carry out the advice given at a consultation held in Paris with Sylvius and Fernel, from which no improvement resulted and Cardan then took charge of the case. The most interesting feature of Cardan's treatment was that he forbade the Archbishop to sleep on a feather bed and made him use a linen pillow. The Archbishop improved speedily and was soon so well that he consented to Cardan's return home. He gave him 1800 gold crowns, much more than the price agreed upon, in addition to many presents of considerable value.

This interesting story, of which only the barest outline is here given, may or may not indicate that Cardan had observed the untoward effects caused by hypersensitiveness. There is no proof in the narrative that the interdiction of the feather bed was the result of experience, and the cure may have been the result of getting away from the feathers, though ordered by the physician for other reasons.

The patient was "a great eater and drinker, and took no exercise; he worked hard, kept irregular hours, and was not shy with the ladies." Cardan's treatment was characterized by common sense. He avoided drugs and blood-letting, and ordered a routine in which "personal hygiene, diet, exercise, cold baths, rest and sleep" were the factors depended upon.

Cardan was a remarkable man in many ways, had a wide acquaintance among notable men, was a student and an observer, a rigid critic of himself, and in addition to his medical attainments was a noted writer on mathematics and algebra. He left an autobiography which has been called "one of the three great biographies in literature."

May not such a man very well have observed cases of protein hypersensitiveness, and applied his knowledge in his practice? Why did he forbid the use of the feather bed, and what part did this play in the recovery of the Archbishop?

M. P. R.

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1. The Story of a Great Consultation, Charles A. Dana, M.D. Annals of Medical History, Vol. III, No. 2, p. 122.

ASSOCIATION NEWS

LIST OF MEMBERS

Proposed for election to the A. P. H. A., June 1 to July 5, inclusive.
Names of Sponsors are set in **Bold Face Type**
Names of New Members are set in Light Face Type

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Giles S. Porter, M.D., Los Angeles, Calif., Epidemiologist, City Health Dept.

COLORADO

Prof. Severance Burrage, Boulder, Colo.
J. H. Bush, M.D., Boulder, Colo. Director of Public Health.

CONNECTICUT

Margaret K. Stack, R.N., Hartford, Conn.
Howard A. Lampher, M.D., Hartford, Conn., Director of Child Hygiene, State Dept. of Health.

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W. A. Jamieson, Indianapolis, Ind., Director, Biological Division, Eli Lilly & Co.

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J. W. Becker, Springfield, Ill. Managing Director, Illinois Tuberculosis Association.

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Robert L. McLaren, Des Moines, Iowa. Vital Statistics, State Board of Health.

KANSAS

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Cassandra Ritter, A.B., Univ. of Kansas, Lawrence, Kan. Bacteriologist, Water and Sewage Div., State Board of Health.

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Helen A. Moore, M.D., Topeka, Kan. Chief, Division of Child Hygiene, State Board of Health.
C. H. Kinnaman, M.D., Topeka, Kan., Epidemiologist, State Board of Health.

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John L. Pepper, M.D., South Portland, Me. Health Officer, First District.

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Wm. S. Dow, Capt. (M. C.) U. S. Army, Chevy Chase, Md.

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Wm. O. Hewitt, M.D., Attleboro, Mass. Health Officer.

John Ritchie, Malden, Mass.
Thos. Jordan, Boston Health Dept., Boston, Mass. Deputy Commissioner.

Professor John Sundwall, Ann Arbor, Mich.
Jacob Kasanin, B.Sc., M.D., Boston State Hospital, Boston, Mass. Graduate Student in Public Health, University of Michigan.

Hornee Morison, East Boston, Mass.
Charles F. Wilinsky, M.D., Boston, Mass. Director, Health Center, Boston.

Mildred F. Ashley, R.N., Coolidge Corner, Mass.
Fredrika Moore, M.D., Cambridge, Mass. Pediatrician, State Dept. of Public Health.

John A. Ceconi, M.D., Dorchester, Mass.
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Harry Goldman, M.D., Roxbury, Mass. Medical Inspector, Boston Health Dept.
James Keenan, M.D., Roxbury, Mass. Medical Inspector, Boston Health Dept.
Charles L. Moran, M.D., Allston, Mass. Medical Inspector, Boston Health Dept.
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Sallie Lou Lott, Vicksburg, Miss. Vicksburg Sanitarium Laboratories.

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Hazel Dell Bonness, B.S., M.D. Director of Child Welfare Division, State Board of Health.

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Gregory D. Mahar, M.D., Syracuse, N. Y. Dept. of Health Diagnostician.
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Elizabeth B. Bricker, M.D., Lititz, Penna. Medical Inspector, Pennsylvania Department of Labor and Industry.

J. Treichler Butz, M.D., Allentown, Penna.
C. S. Reber, M.D., West Reading, Penna. County Medical Director.

SOUTH DAKOTA

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Clara Edna Hayes, M.D., Waubay, S. D. Director, Division of Child Hygiene for South Dakota.

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Howard C. Stewart, M.D., Clarksville, Tenn. County Health Officer in demonstration work, State Dept. P. H.

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David Morey, Jr., Dallas, Texas. Sanitary Engineer.
C. M. Adams, Texarkana, Texas. Asst. Sanitary Engineer, St. L. S. W. Ry.

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David B. Lepper, M.D., Lebanon, Va. Field Director, County Health Dept.

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Selina C. Walters, Charleston, W. Va. Asst. Bacteriologist, State Hygienic Laboratory.

M. V. Ziegler, M.D., **Charleston, W. Va.**
A. P. Goff, M.D., Logan, W. Va. Logan County Health Officer.

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Ernest W. Miller, M.D., Milwaukee, Wis. Medical Director, Employee's Mutual Benefit Association.

John Le Feber, **Milwaukee, Wis.**
Frank W. Kelly, Milwaukee, Wis. Food Industry.
Carl E. Lee, Milwaukee, Wis., Food (Dairy Products).

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MINNESOTA

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Warner Cotton Brockway, Duluth, Minn. In touch with local Health Department.

PENNSYLVANIA

John W. Wright, M.D., Erie, Penna.
Warren W. Hilditch, Ph.D., Erie, Penna. Pathologist, Director Hamot Hospital Laboratory.

WISCONSIN

George C. Ruhland, M.D., Milwaukee, Wis.
Wm. F. Luick, President Luick Ice Cream Co., Milwaukee, Wis. Manufacturer of food product.

LIST OF A. P. H. A. FELLOWS

Fellowship applicants elected by the Governing Council in June, 1923.

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ALFRED W. BALCH, PH.G., M.D.,
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STANLEY DREW BEARD, PH.B.,
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Field Medical Officer, Haifa, Palestine.
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U. S. P. H. S., Memphis, Tenn.
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HERMANN M. BIGGS, M.D.

Those who have an interest in public health work realize most acutely that the death of Dr. Biggs has removed from our midst one of the foremost figures in public health administration.

Dr. Biggs has been a member of the American Public Health Association since 1913, and a Charter Fellow since 1922. Those who attended the fiftieth annual meeting of the Association will remember his speech at the banquet given to Dr. Stephen Smith, entitled "The World Movement for Public Health." He also served as chairman of the Entertainment Committee at that meeting, and as a member of the Committee on Resolutions.

HERMANN M. BIGGS, M.D.

Following his graduation from the Bellevue Hospital Medical School he became an interne in Bellevue Hospital and thus fitted himself for medical practice. However, before beginning this he spent a year in Europe and came under the influence of Koch, Pasteur and their associates and thus imbibed an enthusiasm for the new science of preventive medicine. On his return to New York City, he accepted a position as pathologist in the Bellevue Hospital Medical College, and so was brought in contact with Dr. Bryant, the professor of surgery, who also at the time happened to be the Health Commissioner. Dr. Bryant persuaded Dr. Biggs to take a part-time position in the Department of Health. The field of public health so fascinated him, that he continued throughout his life to devote himself with equal enthusiasm to the practice of medicine and of public health. For many years he has been universally recognized as being one of the foremost leaders in each of these widely separated fields of work.

The outbreak of cholera in New York City in 1892 gave Dr. Biggs a chance to demonstrate the value of bacterial cultures in identifying doubtful cases of cholera. The tests were carried out by Dr. Dunham at the Bellevue Medical College laboratory. The value of these examinations was so evident to the Board of Health that, a year later, on the advice of Dr. Biggs, the first municipal laboratory in the United States for the control of communicable diseases was established. At its inception the work was limited to the examination of cultures from suspected or convalescent cases of diphtheria and of sputa from suspected cases of pulmonary tuberculosis.

In 1894, the manufacture of diphtheria antitoxin was begun by this laboratory. This was the first place to produce it in this country. At Dr. Biggs' suggestion the Board of Health made it available to all the people.

It was his firm belief that the laboratory of the city department of health should be fitted to do for the physicians whatever the development of science permitted. He protected the laboratory workers from political interference and asked in return fruitful results from their routine and research investigations.

Men like Janeway and Prudden supported him from the first, but at that time most of the profession violently opposed many procedures which now all recognize as wise and reasonable. Under his guidance the New York City Health Department became a leader in the methods utilized to prevent tuberculosis. In 1904 he became the Chief Medical Officer of the city and so became in name, what he has long been in fact, the advisor of the Board of Health on all important matters connected with the public health. Through his advice a division of child hygiene was established, and the milk supply of New York City was first rendered clean, then later safeguarded by pasteurization. New hospitals for contagious diseases were erected; tuberculosis clinics were established and the sanatorium for tuberculosis was built at Otisville. In 1914 he was appointed to the post of State Health Com-

missioner. There with his ripened knowledge and great experience he obtained legislation to make possible an efficient State Health Department. Backed by his support a great public health laboratory was created. The health officers and the public health nurses were encouraged to take a more important place in the community. Short courses were given for their instruction in the latest public health information.

Dr. Biggs at his death was a member of a great many private organizations which were interested in various lines of public health and preventive medicine. Thus he was a director in the International Health Board, the Rockefeller Institute for Medical Research and the American Red Cross.

He was one of the American delegates to the medical conference held at the invitation of the Committee of Red Cross Societies at Cannes, France, in April, 1919, and served on the Executive Council.

He was never in a hurry to force the medical profession or the public to accept new legislation, but was content to let the truth gradually sink into their minds through education. He was quick to seize on opportunities which could be utilized to advance public health measures.

The death of Dr. Biggs is a great loss to this state and nation. Only those of us who knew him best can realize how great this loss is.

WILLIAM H. PARK, M.D.

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DR. S. J. CRUMBINE

Dr. S. J. Crumbine, who for nineteen years has been State Health Officer of Kansas, resigned on June 5 to take a prominent part in the work of the American Child Health Association.

Dr. Crumbine's first task will be to visit Southern communities which have applied for a child health demonstration. He will evaluate the possibilities of each community and recommend which communities are best suited to a successful demonstration.

A second activity will be to confer with state health authorities, in order to devise an acceptable plan for promoting birth registration, to the end that the states not yet in the registration area may be qualified for admission, and that throughout the United States more complete birth registration may be secured.

The American Child Health Association realizes that any constructive health program for child hygiene must be soundly based on the data derived from complete birth and death registration.

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MEETING OF THE EXECUTIVE BOARD

The Executive Board of the Association met on June 2d. The following are the more important actions which were taken:

The Board approved a project of the Municipal Health Department Practice Committee to stimulate health work in communities through competitive effort. A more complete statement is made elsewhere in the JOURNAL.

Mr. Hedrich, Secretary of the Association, requested reconsideration of his resignation, which had previously been laid on the table. The Board voted to accept this resignation to take effect with the Annual Meeting, with the understanding that leave of absence be granted beginning July 1st. The Board further voted that Mr. Homer N. Calver be appointed Acting Executive Secretary begining July 1, 1923.

It was voted to appoint a committee to study qualifications for fellowship and to submit a report on revised standards for consideration of the Governing Council. The President appointed A. J. McLaughlin, M.D., Chairman, W. H. Park, M.D., and L. I. Harris, M.D., with the understanding that additional members might be appointed. The Executive Secretary was also authorized to send a questionnaire to all members in order to obtain certain personal data, such as education, public health training, etc.

The Board considered a preliminary draft of the fellowship certificate and seal of the Association but delayed action.

The Board voted to interpret the constitution and by-laws of the Association as permitting members to belong to sections without voting privileges and to serve on committees except as chairmen. Election to such section is to be by Section Councils.

Because of the increased expense to produce the Standard Methods for Examination of Water, the Board voted to increase the sale price to $1.50 per copy.

HOMER N. CALVER

MR. HEDRICH'S RESIGNATION

At a meeting of the Executive Board of the Association held in New York City early in June, Mr. Hedrich presented his resignation as executive secretary, a position which he had held since Professor Selskar M. Gunn resigned to become associated with the International Health Board. Mr. Hedrich has served the Association faithfully and diligently, and during his term in office the Association has materially increased its membership, has moved its headquarters from Boston to New York City where it has joined the National

Health Council, and has undergone further reorganization through the creation of three grades of members. All who have had contact with the secretary and his office have admired Mr. Hedrich for his keen interest and application to his work.

Mr. Homer N. Calver who, on July 1st became acting secretary of the Association, was born and reared in New York City. He is a graduate in sanitary engineering from the Massachusetts Institute of Technology. After graduation in 1914 he went to Winston-Salem, North Carolina, as assistant health officer. During the war he served in France as an ambulance driver and later in the sanitary corps, where he obtained the rank of captain in command of a mobile field laboratory. After the war Mr. Calver served for a time as acting director of the health service of the American Red Cross, and during the recent months has been engaged in a survey of child health agencies in New York City under the auspices of the public-health committee of the New York Academy of Medicine.

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EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to business office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Two nurses to do public health nursing in a live North Carolina county having a population of 33,000, of which 18,000 is urban. Some experience in public health work is desired. Salary $125 per month with transportation furnished. Address 532 S. B., care of this JOURNAL, New York address.

Wanted: Superintendent of health for a progressive city of 65,000 people. Must be an M.D. Apply to Henry T. Bray, M.D., Chairman, Board of Health, New Britain, Conn.

Wanted: Health officer for the city of Great Falls and Cascade county, Montana. Salary $5,000 per annum and transportation furnished while on official duty. Must be experienced in public health work and furnish references. Will be required to conduct diagnostic and educational public clinics in child hygiene and tuberculosis work. Will also be required to conduct venereal disease clinic in connection with city health department. Must obtain license to practice medicine in Montana to be eligible. No state medical license required for present duty. Position open after July 1. Forward application and references to Dr. F. T. Foard, U. S. Public Health Service, Great Falls, Mont.

Wanted: There is available a teaching fellowship carrying $540 per annum in the University of Washington. The candidate would be expected to pursue work leading to the Ph.D. degree. Qualifications may be sent to the Department of Bacteriology, University of Washington, Seattle, Wash.

Wanted: Position of chief epidemiologist, recently created, now open. Salary $4,000. Civil Service protection. Examinations will be held. Anyone desiring to inquire about this position should communicate with the Commissioner of Health, Baltimore City, 311 Courtland Street.

POSITION WANTED

Positions wanted announcements will be carried in this column. The charge is $2 per insertion. Copy should be received at New York office by the 8th of the month.

Wanted: Presentable New York physician, aged thirty, Columbia graduate, wants to enter public health field. Position, part- or full-time. Would travel. Recently with Veterans Bureau. Address 257 E. C., care of this JOURNAL, New York address.

Wanted: Statistician with fifteen years' experience in organization, administration and statistical research in federal, state and municipal statistical bureaus dealing with vital statistics, census and industry, B.S. degree, desires to make a change. Experience includes both field and office work in Middle West, New England and the South. References, present and past employers. Address 256 F. S., care of this JOURNAL, New York address.

Wanted: Position as city or county health officer, or director of public health laboratory, by physician with C.P.H. degree from Harvard Technology School for health officers. Ample experience in both the above lines of work. Some experience in lecture work. Would consider teaching position in bacteriology or public health subjects. Have had some years experience in private practice with special training in venereal diseases. Can furnish best of references. Address 254 G. M., care of this JOURNAL, New York address.

Wanted: Position as health officer in city desiring progressive, modern health administration. Have had several years experience in full-time health work. Graduate Class A medical college and Dr.P.H. degree. Now employed, but desire change. Salary expected, $4,500. Address, 255 K. W., care of this JOURNAL, New York address.

Wanted: University position in public health laboratory by man who has had college teaching experience in biology and bacteriology, several years of public health laboratory experience; was director in U. S. army base hospital laboratory in France. Willing to submit to theoretical and practical examinations in serology, hematology, bacteriology, histopathology. Holds B.S. and M.S. degrees. Available August 1. The position in question must offer an opportunity for study toward the completion of the doctorate in science. Address 252 S. G., care of this JOURNAL, New York address.

Wanted: Will be at liberty to consider location as health officer soon. Have recently done postgraduate work abroad and in this country as well. Believe in the education of the public from school age as to matters of health and am confident much can be done in a preventive way. Address 249 W. E., care of this JOURNAL, New York address.

Wanted: Teaching or administrative position in public health and bacteriology by man who has been for several years in charge of a state department of health laboratory, who was captain in charge of the laboratory service of a U. S. army base hospital unit in Europe, and has since the war increased his rank to major in the Sanitary Officers Reserve Corps. Has had several years of college teaching experience in bacteriology and biology and will be free to accept a position next September. Address 260 W., care of this JOURNAL, New York address.

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Recreation Association Studying 5,000 Camps.—A study of summer camps in the United States was begun June 1 by the Playground and Recreation Association of America under the supervision of an advisory committee appointed by Joseph Lee, president of the Association. The committee includes: Dr. J. H. McCurdy, chairman; Dr. John H. Finley, Miss Evelyn Dewey, Nelson Lewis, Dr. John Hartwell, Gaylord S. White, General Merritte W. Ireland, Caspar Whitney, Dr. Myron T. Scudder, Miss Helen Davis, William A. Welch, and Mrs. Louis Guerineau Myers.

The study, which is financed by the Laura Spelman Rockefeller Memorial, is under the immediate direction of L. H. Weir, an expert on camps and municipal recreation and will include the preparation of a practical summer camp handbook. Information assembled will be evaluated with a view to helping existing camps and to pointing out to future camps the highest and most practical standards of business, health and social administration. Subjects which will be given special attention are location and construction of camps, sanitary and medical facilities, diet, recreative activities and nature study education.

There are approximately 5,000 summer camps in the United States attended by several hundred thousand boys, girls and adults annually, according to Mr. Weir. Many camps are conducted by recreational agencies, business men's clubs, settlements and churches. However, 330 are private. The last few years have seen a vigorous growth in the municipal camp idea and there are more than 125 vacation camps operated by cities. The automobile has been responsible for the 2,000 tourist camps now said to be in existence.

BOSTON AND THE FIFTY-SECOND ANNUAL MEETING OF THE A. P. H. A.

Rise, then, O buried city that hast been;
Rise up, rebuilded in the painted scene,
And let our curious eyes behold once more
The pointed gable and the pent-house door,
The Meeting-house with leaden-latticed panes,
The narrow thoroughfares, the crooked lanes!

—LONGFELLOW.

Courtesy of Boston Chamber of Commerce

Public Gardens. Originally part of the Charles River Marshes.

Even though you may have visited Boston many times, may even have been graduated from one of its schools, there is a charm about it which will always appeal to every American, no matter how many times he may return. If you have never had the pleasure of a trip to Boston, this will be a good opportunity for you to wander about and look up all the dear old spots of which you have read and thought so many times.

The Old State House, round which the town was built, erected in 1713, has served in many capacities, playing a very important part in Revolutionary times. From the balcony on the east end overlooking State Street, the Declaration of Independence was read. To-day it houses many fine old prints and relics of Colonial days. On State Street not far below the Old State House, there is a curious spot, marked by round paving, where the Boston Massacre took place in 1770.

A short distance north, going through old Exchange Street, is Faneuil Hall, known as the "Cradle of Liberty." The upper part is used by the Ancient and Honorable Artillery Company as an armory and museum. The lower floor is, as always, a public market, and across the street is old Quincy Market.

From here north and east, there are many narrow, winding streets, with here and there a house which has meant much in the history of our country. The house of Paul Revere still stands, the oldest building in Boston, now in the midst of the Italian section.

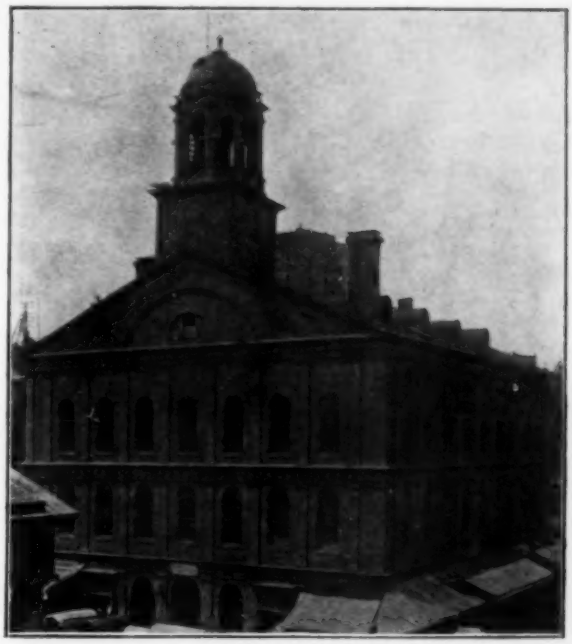
In the same neighborhood is Christ Church (Old North Church), in Salem Street, the oldest church building in Boston. It was built in 1723, and was the second Episcopal church established in Boston. The appearance of a visitor in this section almost invariably calls forth numerous little foreigners who will offer, for a few cents, to recite for you "Paul Revere's Ride," and explain to you how the signals were arranged in the Old North Church tower that those in Charlestown might know of the movements of the British.

All those who have studied the early his-

tory of Boston know that Paul Revere was a very prominent man in his day in this city and that he held many public offices, but it is not so generally known that he was also the first president of the Boston Board of Health.

One of the most interesting churches in Boston is the Kings Chapel, at Tremont and School Streets. This was the first Episcopal church in Boston. Because of opposition to the established church, great difficulty was experienced in obtaining ground on which to put this church, and so finally the governor appropriated a part of the old burying ground in 1688. The present building was erected in 1754. During the evacuaton of Boston, those of this congregation known as belonging to the "King's Party" were compelled to flee to Canada.

If one is interested in old cemeteries, there are many quaint tombstones to be found in Kings Chapel Burying Ground, where some of the



Courtesy of the Royal Blue Line Co., Inc.

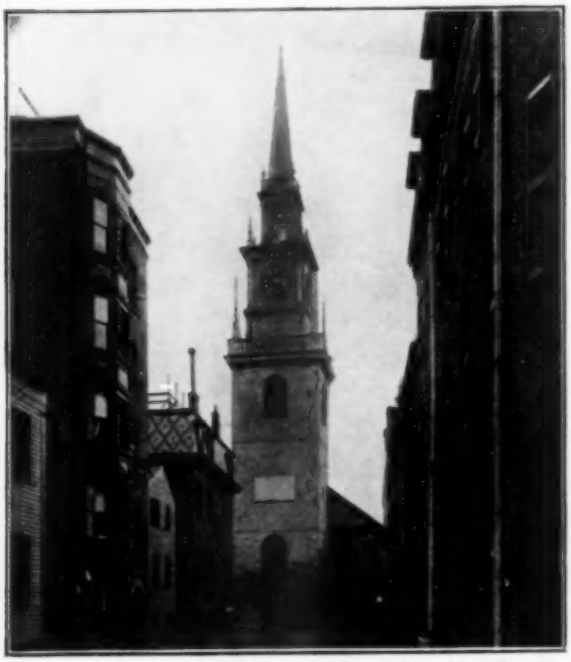
Faneuil Hall. Built by Peter Faneuil and presented to Boston as a town hall in 1742.

Courtesy of Boston Chamber of Commerce

OLD NORTH BRIDGE, CONCORD

By the rude bridge that arched the flood,
Their flag to April's breeze unfurled,
Here once the embattled farmers stood,
And fired the shot heard round the world.

—*Emerson.*



Courtesy of the Royal Blue Line Co., Inc.

OLD NORTH CHURCH

Hang a lantern aloft in the belfry arch
Of the North Church tower as a signal light,—
One, if by land, and two, if by sea;
And I on the opposite shore will be,
Ready to ride and spread the alarm
Through every Middlesex village and farm,
For the country folk to be up and to arm.
—*Longfellow.*

inscriptions date back as far as 1630. Back of Park Street Church on the north side of the Common, is the Old Granary Burying Ground, in which are the graves of three signers of the Declaration of Independence, Paul Revere, and many others of historic fame. There are a good many queer epitaphs. Mount Auburn Cemetery, in Watertown and Cambridge, is a most beautiful spot, and within its borders will be found the graves of numerous people, particularly of literary fame.

Boston Common, set apart from the beginning of the town as a place of pasture for cattle, contains fifty acres. There still remains in one corner the old Central Burying Ground, established in 1756. Just across Charles Street at the west of the Common are the Public Gardens, entirely of made ground, as at one time there was the narrowest neck of land joining the old town to the mainland at this place, and the most of this section was under water at high tide.

The rocky nook with hill-tops three
Looked eastward from the farms,
And twice each day the flowing sea
Took Boston in its arms.
—*Emerson.*

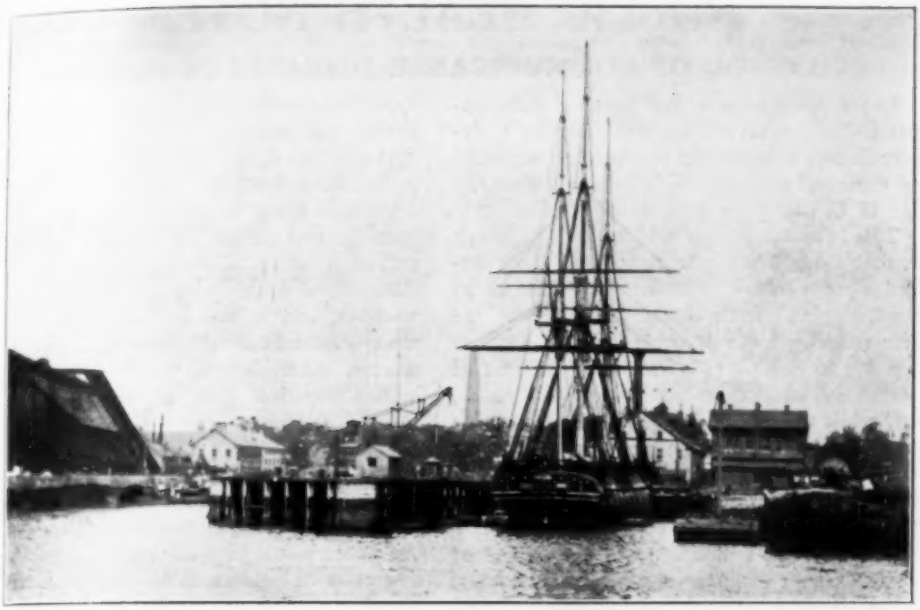
Courtesy of Boston Chamber of Commerce

Kings Chapel. Mary Chilton, the first woman to step off the Mayflower, lies buried in the graveyard adjoining.

Courtesy of the Royal Blue Line Co., Inc.

Park Street Church. Erected in 1810 on the ground of the old granary.

Boston abounds in libraries, art galleries and educational institutions. Harvard University, dating back to 1636, and the oldest college in the United States, is well worth a half day's visit. Of course, it has outgrown the "Yard" where the older buildings stand.



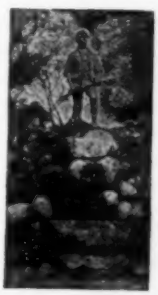
Courtesy of Boston Chamber of Commerce

Frigate Constitution.

The newest building is the Widener Memorial Library. The Medical School, in which our members will be most interested, is not in Cambridge, but near the Fens, not so far from our headquarters. The Massachusetts Institute of Technology, on the north side of the Charles River in Cambridge, is, as everyone knows, the leading technical school of the country. Of course, Boston Public Library is always worth a visit, and it is so near the Copley-Plaza Hotel that no one need miss this treat.

City regulations provide that no building in Boston shall exceed 125 feet in height, but as the United States Government is not bound by these laws, it has built a tower on the Custom House, which makes the total height 498 feet from the ground. A wonderful view may be had from this tower.

There are a great many beautiful places which may be reached by a short automobile or trolley ride—in fact, more than almost any other large city in the country can boast. There are the many beaches along the North Shore, Plymouth on the south, the Blue Hills Reservation, with the highest point on the coast below Maine, the road to Worcester, which is one of the finest in New England, Wellesley College, within about seventeen miles of the city, and the road through Arlington, Concord and Lexington.



MINUTE MAN, LEXINGTON COMMON

"Stand your ground. Don't fire unless fired upon; but if they mean to have war, let it begin here!"
—*Captain John Parker.*

PUBLIC HEALTH NOTES

CONTROL OF COMMUNICABLE DISEASES IN SCHOOLS

In the April issue of the JOURNAL there appeared in the Health Officers' Section a description of a method of preventing the spread of communicable disease in public schools, by Dr. H. G. Rowell of New Bedford, Mass.

This is an interesting subject, but one which at first thought might be considered about settled already—the control of such diseases as are likely to attack school children, we are prone to say, being a simple matter. Failures are due to lack of coöperation on the part of parent or teacher, so we inform the public, and while this is true in the main is it not also true that many times the methods used in the control of such diseases are crude and not based upon an accurate knowledge of the means by which diseases are spread?

I believe that a discussion of the method of control of the ordinary communicable diseases of childhood is at all times valuable, and perhaps particularly timely now when really brilliant results are being achieved by many in this field. The public judgment of the efficiency of a health officer, we must remember, depends largely upon his ability to "control" or prevent an epidemic. In public schools especially, the success or failure of his work is often strikingly shown. Probably few boards of education realize the importance of preventive work among their pupils, but even so their support is more easily gained for the prevention or suppression of contagious diseases than for any other form of health activity. We are, perhaps, too likely to allow our efforts in this particular field to suffer by comparison with other forms of health promotion which the school nurse must largely carry on, and which to-day appeals more to most persons who are interesting themselves in child hygiene, referring to such work as the establishing of milk lunches, weighing and measuring, etc. Important as these are, the menace of contagious diseases, if exposure actually occurs, is still almost as great for the sturdy as for the weakly, in similar age groups, and in the toll of lives taken and systems shattered, measles or whooping cough may well equal the other debilitating influences that undermine the health of children. For instance, we know that in 1921 over 16,000 young lives were sacrificed to measles alone in the registration area. Can it be proved that malnutrition, for instance, was responsible for as much ill health during one year?

The writer agrees that health promotion by such means as improving the environment, providing more outdoor recreation, better housing, more healthful working conditions, etc., must occupy a more and more important place in the health program of modern communities, and it may be that these are the most important factors in the prevention of disease. Certainly, the trend is unmistakable in this direction (and we would not have it otherwise), but—*measles caused over 16,000 deaths in the United States Registration Area in the United States in one year.* The most sanitary environment, the best equipped playgrounds, the cleanest home surroundings in the world would probably have prevented very few cases of measles, in the absence of definite preventive measures aimed at controlling the children themselves.

When the threat of an epidemic disease appears in the schools of a city, certain information regarding the susceptibility of the children of a class or school is of value. One who has had measles, whooping cough, scarlet fever or mumps, is unlikely to have these diseases again, although, of course, it is possible. Chickenpox and smallpox confer a more lasting and certain immunity. Providing one is certain of the facts one may be guided by this immunity in outlining a course of action.

It is pretty well understood by most persons that such diseases are spread by the scattering of nose and mouth secretions, by direct and indirect transference of such secretions from one to another; also that in all but a negligible number of cases such transferences in order to cause disease must be fairly direct and immediate.

The whole problem of communicable disease control, once exposure has occurred, or an epidemic has started, resolves itself into this: The prevention of contact between the sick or those carrying the germs of sickness, and the nonimmune children of the school. Nonimmune children who have been exposed to contagion will not carry infection to others while still well, if ordinary precautions are taken in the home. If the time of exposure is known, one may safely leave such a child in school until near the end of the incubation period and

then keep him at home. It is presumed, of course, that daily inspections of the pupils in the school or class room will be made by the nurse or school inspector and, of course, the teacher (the first line of defense for her charges) will be expected to watch her pupils carefully and report anything suspicious at once. In a case of scarlet fever, it is true, with an incubation period that it may not last over 24 hours, such a plan is not feasible, but for measles, chickenpox, mumps, and whooping cough, in the absence of cough only, it will work out well. Diphtheria nonimmunes can, of course, be immunized.

Allowing nonimmune children to remain in a classroom subject to the above conditions during the length of the incubation period will save many days of absence from school.

The flaws in the above method of controlling contagious diseases in schools are these:

1. Inaccuracy in one's information as to the diseases the child has had. Parents sometimes forget and the disease census card may contain incorrect data. Sometimes, of course, the history may be verified from the records of the health department.

2. A child may have measles twice or oftener. Second attacks of scarlet fever or whooping cough are not so rare. This fact will occasionally cause trouble. Watchfulness and close observance of each child will help to lessen the risk. Nothing can take the place of the daily inspection and regardless of whether or not a child is considered immune, any signs of illness or rise in temperature should be sufficient grounds for immediate removal from school.

We have used this method in the Rochester schools many times with good results.

W. F. BLEIFUSS, M.D., Fellow A. P. H. A.,
Deputy Health Officer, Rochester, Minnesota.

✠

Infant Mortality in 1922.—Of the 674 cities in the United States over 10,000 population, 635 are represented in the statistical report of infant mortality for 1922 published by the American Child Health Association. This is the fourth such annual report and gives cities from coast to coast an opportunity to check up on their infant mortality rates in their relation to other cities.

A city can know the value of its health work only when it knows how its infant mortality rate compares with that of others. Some of the questions that will be asked when those who think read these tables are: "Is there anything that we can do to lower our rate?" "Is there any place where we can study methods to lower our rate?" "Can we make our city a safer place for children?"

The figures are arranged in two ways: in tables according to the states with actual figures over a period of six years, and in tables according to the population with graphic representation of the 1922 infant mortality rates. The cities are divided into five classes according to population, and comparative figures are shown as regards cities within the same class. It is interesting to note that within this time, rates in all the groups of cities in the birth registration area have become more nearly the same and that in cities of all four classes below 250,000 population, they have materially decreased.

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Helmholtz and the Annual Meeting.—The great Helmholtz, on his seventieth birthday, observed that no important idea had ever come to him when he was at his desk, nor when he was tired, but usually when he was musing on other things.

Many a health officer will testify that some of his most useful work was done on the way to, or at, the Annual Meeting or at a Convention.

Plan to be at the Boston Annual Meeting October 8-11. Special railroad rates.

✠

A Milk-Borne Epidemic of Septic Sore Throat in Portland, Oregon.—A milk-borne epidemic from March 24 to 31 included 487 cases of septic sore throat with 22 deaths, a mortality rate of 4 1/3 per cent. Almost all of the cases and all but one of the deaths occurred among people who had drunk raw milk from one dairy which had been rated as one of the best in the city. The dairy had 1,400 customers. Similar strains of hemolytic streptococcus were obtained in almost pure culture from the inflamed udder of the cow, from one milker's throat and from the throats of numerous septic sore throat patients and contacts. All these strains were shown to be of the human type. It is probable that the milker in question infected the udder of the cow, that the cow was milked in with the herd, and that the massed infection produced resulted in the epidemic. R. L. Benson and H. J. Sears, *J. A. M. A.*, 80:1608-1612, June 2, 1923.

The Schick Test and Immunization Against Diphtheria in the Eighth Sanitary District of Vermont.—In 1922 the first work was begun to bring about active immunization against diphtheria in the eighth sanitary district of Vermont. This district is comprised of twenty-six towns, covers an area of 948 square miles and has 35,000 population. Despite the inadequate publicity methods used to acquaint the population, about 60 per cent of the children received tests and immunization treatment. Of the 2,030 tests made, 74 per cent were positive, 2 per cent positive combined and 23 per cent negative and 1 per cent pseudo.

The results showed that both the per cent and the degree of susceptibility is higher in sparsely populated sections than in urban communities. The percentage of susceptibles is higher among native born and the higher the degree of susceptibility the less reaction there is to toxin-antitoxin. Age is a relatively unimportant factor in immunization of rural population.—C. W. Kidder, *Pub. Health Report*, 38:662, March 30, 1923.

✚

The Relation Between Home Conditions and the Intelligence of School Children.—The mental tests suggested by Mr. Cyril Burt are significantly correlated with the teacher's estimate of intelligence, and such tests may be legitimately employed for the purpose of obtaining uniform standards of grading intelligence. There is distinct correlation between the intelligence of school children and their environment, whether measured by the economic position of the parents, by the care taken of the home, or by the clothing of the children. The partial correlations of age are uniform in sign.—L. Isserlis, *Medical Research Council, Special Report Series*, No. 74.

✚

Protein and Pellagra.—Results of the studies published in the American scientific periodicals conclude that the animal protein in the diet is all-important in the prevention and causation of pellagra. However, several experiments on individuals as well as families show that the question of pellagra is not a question of protein but of vitamin. Two very healthful families in Eden, near Berlin, Germany, consumed one and five calories of animal protein a day as compared with the total protein calories a day of 56 and 80 respectively. In the year 1918 when rationing cut down meat, and bread cereals, barley, and potatoes were very extensively used in its place, the death rate in Denmark from heart disease, bronchitis, broncho pneumonia and senility was 255 per 10,000 for men and 270 for women, as compared with 334 and 343 in 1910-1914, and 352 and 360 in 1919-1921.—M. Hindhede, *J. A. M. A.*, 80:1685-1689, June 9, 1923.

✚

The Schick Test, Diphtheria, and Scarlet Fever. A Study in Epidemiology.—In a study of the Royal Naval School at Greenwich, where diphtherial infection occurred from 1917 to 1922 with only two years of freedom from the disease, the Schick test has been found a reliable instrument for ascertaining who are immune from diphtheria. There will always be a few frankly doubtful reactions due to confusion caused by pseudo-reactions, which are variable in intensity and are transitory. Repeated readings will reduce this error to 2 or 3 per cent. The positive and pseudo- or combined Schick reaction is often a step on the way to immunity. The new boys in the school at the time of the study showed 45 per cent positive tests as compared with 14 per cent in the case of old students. Forty-seven per cent of 450 original reactors had become immunized without symptoms by an average exposure to diphtherial infection of eight months duration. One attack of diphtheria confers immunity in the vast majority of cases even if the Schick test remains positive. Of the recovered cases at the school, 92 per cent became immune in nine months and no boys suffered a second attack. Carrier rates may be as low as 1 per cent and yet spread may occur. Carriers of virulent bacilli are always Schick negative reactors; avirulent bacilli carriers may be either positive or negative reactors. Although there is no reason to suppose there is anything in common between their biological causative agents, scarlet fever and diphtheria spreading in the same environment show striking similarities. It is probable that diphtheria usually spreads from case to case by chains of contact carriers, while early in an epidemic before immunes are numerous, scarlet fever spreads directly from case to case.—Sheldon F. Dudley, *Medical Research Council, Special Report Series*, No. 75.

HEALTH FILMS COMMITTEE OF THE NATIONAL HEALTH COUNCIL

Title: "Waste Disposal."
Issued by: Society for Visual Education.
Length: One reel.
Distributed by: Society for Visual Education. Rental, $3.50 a day.
Synopsis: A study, by motion picture, of the two principal methods employed for the safe disposal of city sewage. One system illustrates methods used by cities close to large bodies of water. Waste is stored in tanks until the tide goes out, and then discharged into the ocean. The other system illustrates the more elaborate method of purification through bacteriological action. Motion pictures follow the progress of city waste from pumping station to "trickling filter," "settling tank" and "sand filter." From the sand beds the sewage flows into a little brook, and thence down the stream. Throughout the reel we are shown, through a microscope, interesting closeups of the bacteria which convert harmful organic matter into harmless minerals.

This is a "school film" and should be accompanied by the syllabus supplied by the distributor. It may also be used with advantage for general audiences of adults. The film is well balanced, the continuity is good and the subject is interestingly treated. It is an excellent medium for stimulating an interest in, and developing an appreciation of the advantages of sewage disposal as a sanitary problem.

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Title: "Unhooking the Hookworm."
Issued by: International Health Board, Rockefeller Foundation.
Distributor: I. H. B., Rockefeller Foundation, Society for Visual Education. Rental, $2.50 per day.
Length: One reel.
Purchase price: $80.
Synopsis: The film covers cause, character, distribution, cure and prevention of hookworm disease. Scenes covering the life history of the hookworm include: a remarkable hatching scene showing the embryo breaking out of the hookworm eggs; the manner of scattering eggs and larvæ about the ground around privies; manner in which larvæ are picked up; how they penetrate the skin; travel through the body, and lodge in the intestines; an excellent scene showing numerous hookworms attached to the intestine; typical victims, and a comparison of the anemic blood of the hookworm victim and normal blood is shown; a scene in a doctor's office covering examination and prescription, and a scene in a home showing the various steps in the taking of medicine for cure, portray the process of treatment. The film closes by pointing out the rôle of the privy in prevention.

This is a one-reel instructional film describing in popular scientific form the cause, character, distribution, cure and prevention of hookworm disease.

The Committee regards it as suitable for adults and older children of at least medium intelligence. The subject-matter is interestingly treated; and the presentation conforms with good pedagogical principles. The motion picture technique is satisfactory. On the whole the film tends to arouse interest in the problem of hookworm control and explains convincingly the reasons for public health measures dealing with this disease.

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Title: "Out of Everywhere."
Produced by: Worcester Film Corporation.
Distributed by: Connecticut State Department of Health, Worcester Film Corporation.
Length: One reel.
Purchase prices: $125.00 celluloid; $150.00 safety.
Synopsis: This one-reel film gives the instruction which an expectant mother should have as to the care of her body and the preparations which she should make for the birth of her child. The main points in personal hygiene are touched upon as well as suggestions as to the part played by the public health nurse, the clinic, and the family doctor.

"Out of Everywhere" succeeds in directing attention to some of the most important points of personal hygiene which the expectant mother should understand. The photography is good, the cast is good and the setting of action of the film is appropriate. The cooperation between the doctor, the nurse, the family and friends is particularly well brought out. The film is well suited for the audiences for which it is intended, namely, adult women. The main points are clearly made and the film leaves a happy, wholesome impression.

BOOKS AND REPORTS REVIEWED

Exercise in Education and Medicine. *R. Tait McKenzie, M.D., LL.D. Octavo of 601 pages, with 445 illustrations. Philadelphia and London: W. B. Saunders Company, 1923.* Cloth, $5.00 net.

The third edition of this well-known book has recently come from the press and will be welcomed by all who are interested in physical well-being. McKenzie was a pioneer in the line of work of which he writes and there are few people anywhere as well fitted as he to write on the subject. He is a physician by profession, an artist by birth as well as training, and a well-known authority on physical education and athletics, a combination which is unique. The first edition of this book appeared in 1909, the second in 1915. The present edition contains much new material but has been kept approximately to the same size as the second through the omission of some material, which, however, has not injured its value. During the Great War McKenzie entered the R. A. M. C., and had several years of experience as physical training officer at Aldershot, as medical officer in command of a convalescent camp of 5,000 men, and as inspector of physical therapy in such camps in England, Canada and the United States. The new edition of the book is notable through containing the results of his studies and experiences during this trying time.

The book is divided into two parts. The first 322 pages is devoted to Exercise in Education. The second part, somewhat shorter, is devoted to Exercise in Medicine. Among the chapters in Part I we believe those on the study of the heart are among the most valuable. There is given, however, a review of the systems in Germany, Sweden and France in addition to those usually carried out in England and the United States. Almost every question which one can ask is treated of. We note also as of particular interest the two chapters on Education of the Blind and the Deaf Mutes, and of Mental Defectives. It is abundantly and well illustrated and particularly notable for the photographs of the author's own models made from life of typical facial expressions in extreme muscular effort, in breathlessness and exhaustion. This part of the book will appeal particularly to those who are interested in athletics and education.

The second part of the book will appeal most to physicians who are interested in the development of the physically deficient and the reconstruction of the maimed. We must note especially the chapter on the mechanical appliances for the massage and exercise in which the new apparatuses which were used in re-educational institutions of a number of countries are described and figured. The isolation of various muscle groups in need of development, methods of supplying resistance and of measuring the work done as well as the range of movement are interestingly described. Re-education after amputation and corrective gymnastics in cases of lost or impaired function are also given.

There is an especially good chapter on exercise in the treatment of diseases of the circulatory apparatus in which the work of Sir James McKenzie, the Heaton Park Command Depot and the Winifred Masterton Burke Relief Foundation Institution at White Plains is given consideration. A chapter on the treatment of respiratory diseases brings to fresh notice the methods of Patterson at the Frimley sanatorium and brings out the treatment of tuberculous soldiers in our American sanatoria.

We believe this book of McKenzie's is easily the best one in any language on the subjects of which he treats. It is written in interesting style, and the make-up of the book, print, paper, etc., is such as to attract the reader.

It should be emphasized that this is not a book in which the athlete and the physical trainer alone can find matters of interest. It contains much of great value to physicians and surgeons, since McKenzie has taken such a prominent part in placing physical training on a scientific basis not only in education but also in the practice of medicine.

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Publicity. *R. H. Wilder and K. L. Buell. Ronald Press Company, New York, 1923.* 271 pp. $2.75.

This is the first to appear of several books on the subject of publicity methods which have been announced by publishers or by the authors and which are written by members of firms of publicity counsellors. The authors, R. H. Wilder and K. L. Buell, intend their book to be of use to business concerns, members of political or charitable committees, office holders, and others.

The Canadian Mother's Book. *The Little Blue Books Mothers' Series No.* 1. *By Helen MacMurchy, M.D.*, 1923.

This is an attractive little publication issued by the Department of Health of Canada. The quality of its paper, the large clear print, the many paragraph headings in bold-face type and the helpful illustrations constitute a very inviting make-up. The information and instructions given to the mothers are sound and wise. The attitude of the writer is a very friendly, sympathetic one—as of one woman to another. The advice given is practical and easily understood, and important points (such as breast feeding) are properly stressed. The spirit of reverence, service and high patriotism in this little book is a fine tribute not only to its author but to Canadian motherhood.

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New Growths and Cancer. *Simeon Burt Wolbach, M.D. Harvard University Press (Harvard Health Talks No.* 10), 1922. Pp. 53. Price, $1.00.

Written as it is for popular instruction, this small volume of some fifty pages affords an admirable survey of our knowledge of cancer at the present time. Beginning with a section on the nature of tissues in general, the differences between harmless tissue growths and tumors and between benign and malignant neoplasms are clearly brought out. The causes of cancer, so far as they are known, are all discussed. Stress is very properly laid upon the fact that the disease is not infectious nor hereditary. This is important, for certain biologists have made the statement that if the disease is hereditary in mice it is hereditary in man. In the first place, that the disease is hereditary in mice has not yet been definitely proved. The evidence seems to point rather to an hereditary liability of the tissues to tumor production, rather than to a direct inheritance of the tumor process itself; and secondly, the evidence that cancer is hereditary in man is far from being established. On the contrary, the life insurance statistics point very strongly to the fact that while there may be hereditary susceptibilities, the actual occurrence of cancer is determined by chronic irritations of various sorts. Rapidly accumulating evidence on the frequency of occupational cancer or that due to some peculiar social habit indicates how large a part chronic irritation plays in determining the incidence of the disease in man. Examples of a number of forms of occupational cancer are given. In considering treatment, the writer properly stresses the advantages of surgery, and calls attention to the progress that has been made in the use of X-ray and radium as furnishing hope for the future that a certain number of cures may be obtained by these agents. The only criticism that can be offered is on the section on Chemical Agents, in which the writer cites the fact that selenium, or tellurium, eosin compounds with phloridzin, and an excess of calcium have all been reported to retard the rate of growth of certain animal tumors. As all of these claims have long since been refuted, they should not be considered in a volume intended for the public, as they are apt to lead people to try useless remedies. A number of quacks are using selenium and tellurium in the treatment of cancer entirely on the authority of von Wassermann's long since controverted experiments.

The publicity work of the American Society for the Control of Cancer is mentioned with approval and its various phases discussed, as is the question of the alleged increased frequency of cancer, the writer quoting from a paper by Professor Wilcox of Cornell University, that there is no definite proof of an actual increase in cancer, even though the recorded death rate is rising. In the final section good advice is given on the avoidance of quacks and the selection of the proper type of physician to give advice in case of a suspected cancer. All in all, this little volume can be recommended highly to those who have the necessary knowledge for its comprehension. It is not quite simple enough for the average reader of newspapers, nor will its many allusions to research work in biology suggest anything to the mind of the layman ignorant as he is of all but popularized and predigested science.

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Veterinary Hygiene, Care of Health, and General Science of Contagious Diseases of Domesticated Animals. *Martin Klimmer. Third and Newly Revised Edition, with 270 Illustrations. Authorized Translation by A. A. Leibold, D.V.M., formerly Professor of Physiology and Hygiene, later Professor of Pathology and Bacteriology at the Chicago Veterinary College, Chicago. Alexander Eger*, 1923. Cloth. Price, $4.75.

That the third edition of this well-known book has been translated into English and made available to the veterinary profession is a matter for congratulation. The present edi-

tion, instead of including both Hygiene and Feeding in one volume as formerly, is published as two volumes. There is little criticism to be made of the substance of the book or the manner in which it has been treated. It is German throughout and thorough. In this respect it goes even so far as to picture a latch for a stable door with countersunk finger hold instead of a knob.

While all knowledge is useful it seems to us that the book could be shortened with advantage by leaving out some material which need not be considered under the head of Hygiene, for example, the discussion of the influence of the nitrogen fixing bacteria on the growth of the legumes. Also we note that human diseases which are not transmissible to animals, such as cholera and typhoid, are mentioned and precautions against them given. There are certain other matters treated of in the book, the object of which is not entirely clear, as for example, the detailed discussion of Ehrlich's side-chain theory. Since such subjects are always given in full in textbooks on bacteriology, their inclusion in a work on hygiene seems unnecessary. This point is apparently recognized by the author, when, after giving approximately forty pages to this subject, he refers for further particulars to other works. As a further example of material which does not strictly belong in a work on hygiene he gives, in an excellent chapter on the care of pregnant animals, directions for delivery which belong more correctly in a work on obstetrics. As might have been expected, there is very little reference to American work, though he does mention the work of Dorset, McBryde and Niles on hog cholera.

Under Inheritance of Diseases, he expresses some ideas which are not in accordance with those generally accepted by biologists, and gives a list of hereditary defects which is open to considerable doubt. In fact, concerning two of them he quotes with approval opinions as to their nonhereditary character.

These statements are not intended as criticisms of the value of the book, but in America, at least, we have not the time to read unnecessary matter. Chapters on the air, ventilation, soil, water, individual hygiene, the stable, the pasture, contagious diseases, cover every subject on which the veterinarian might need information. An especially valuable chapter is that on Noxious Agents in Feeds in which a list of 92 poisonous plants is given. This list would be more useful had the translator indicated by a star, or some other sign, which of these plants are found in the United States, and giving the regions in which they occur most frequently. All that has been given is a reference to Bulletin 575, of the United States Department of Agriculture, which refers only to poisonous plants found in the range regions of this country.

The book is a veritable storehouse of useful knowledge which can be recommended without hesitation. Notes by Dr. J. R. Mohler, chief of the Bureau of Animal Industry, have made the book more valuable to American readers. In this country we might well cultivate greater attention to detail than is usually given. The translator has done his part well. We believe, however, that it would have been better had he not translated his text so literally. The use of brackets has been overworked, and in a few places terms are used which are difficult to find in American dictionaries.

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Scientific Feeding of the Domestic Animals. *Martin Klimmer, Ph.D., D.V.M., Professor of Hygiene and Feeding, and Director of the Hygienic Institute of the Veterinary College of Dresden. Third Edition. Translated by Paul Fischer, B.S.A., D.V.M., formerly Professor of Pathological Anatomy in the Ohio State University, College of Veterinary Medicine, State Veterinarian of Ohio, etc.* Pp. 242. 1923. Cloth. Price, $3.25.

There are now several helpful texts on the feeding of domestic animals, but it is obviously impossible for one book to cover all phases of the subject. The admirable book of Klimmer's contains useful discussion of several topics not ordinarily included in our American texts, and so it will be a welcome addition to our reference shelves. As suggested by the translator the agricultural practices of Germany are in some respects altogether impractical here. For that reason this book is not suitable for a text in this country, but it will be a valuable addition to the library of veterinarians, investigators, and teachers.

Over one-half the book is devoted to feeding stuffs, their chemical composition, and methods for their conservation and preparation. Our feeding operations are in general conducted on a much larger scale than is the practice in Europe, so many of the refinements and economies observed abroad are not practicable here. Doubtless, however, we may note

with profit the care and thought that is devoted to agriculture on the other side of the Atlantic.

The feeding stuffs themselves are given a very detailed description, including their botanical classification, and nutritional properties. Considerable space is also given to the examination of feeds, from the standpoint of adulteration, and contamination with bacteria or toxic substances.

Section II is devoted to the principles of nutrition and feeding. It begins with a brief statement of the physiological rôle of nutrients, and then proceeds to a practical discussion of the feeding of the various breeds and classes of animals. Needless to say, much of the advice does not apply under our conditions.

Several features of the book require special mention:

This volume contains practically nothing concerning the physiology of digestion.

The discussion of vitamins is very brief. In view, however, of our limited knowledge of this subject as applied to farm animals, detailed directions for a practical feeder may be confusing and not helpful. So much space is now being given to this subject that, however important it may be, some will feel refreshed by the omission in this volume of the usual endless repetition.

On page 156 there are estimates of the calcium and phosphorus requirements of animals that some will find interesting.

The author lays more stress on the possible injurious effects of certain feeds, especially of rape and some of the legumes, than American experience would seem to justify.

The system of calculating rations is based on Kellner's starch values. Practically speaking, we do not use that system at all.

Table I of the appendix gives the proximate analyses of a number of feeds. Table II gives the mineral analyses of a still longer list.

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Infant Mortality. *Hugh T. Ashby, M.D., M.R.C.P., Visiting Physician to the Manchester Children's Hospital. Second Edition. Cambridge University Press.* 1922. Pp. 224. Price, $6.00.

The first edition of this valuable outline of infant mortality problems in Great Britain appeared in 1915. The second edition is a complete revision and contains many new tables. The author has had wide experience and contact with the poor in Manchester and Salford which enables him to discuss with certainty the relation of poverty and ignorance to a high infant death rate. The generally accepted statement that those places which have a high infant mortality rate also have a high death rate in the next few years of life is backed up with statistics from certain towns. The all too common statement that there exists a natural selection of the physically and mentally fit is well answered. Bad housing, overcrowding; and defective sanitation is discussed. For economic reasons the author favors the employment of married women in industry in so long as the trade is not a dangerous one, and a suitable rest period is provided before and after confinement. The ways by which infant mortality can be lowered consist in education by physicians, health visitors and nurses and the minimizing of the detrimental influence of poverty.

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Bacteriology. *A Study of Microörganisms and Their Relation to Human Welfare. H. W. Conn, Ph.D., and Harold J. Conn, Ph.D. Baltimore: Williams and Wilkins,* 1923. Pp. 442. Price, $4.00.

This is an intensely interesting textbook on bacteriology written primarily for college classes in first year bacteriology and should appeal especially to all classes of public health workers, such as administrators, sanitary engineers, statisticians, food officials, nurses and others who desire to obtain a general conception of the field without being bored with the many minute details of the subject which are essential only to those who have specialized in laboratory work. The book should meet a much needed want in this respect and for this reason has made a very forceful impression upon the reviewer.

The subject is approached from the historical side which gives the uninitiated an opportunity to grasp fundamentals which are all too frequently omitted from books dealing with this subject. First there is the period of speculation which preceded that of basic discoveries, the latter covering the work of Pasteur from 1860 to 1880. This is followed by the period of rapid development in which is described the feeling of healthy rivalry which developed between the French and German schools, the former led by Pasteur, Roux, Yersin and their coworkers, the latter by Koch, Kitasato, Behring, and others. As the authors state "students are much more eager to learn things about bacteria after hearing something about the interesting dis-

coveries which first brought them to men's attention."

The book is written in a most entertaining style and will appeal to all intelligent people who desire a story on bacteria, protozoa, fungi, and yeasts, and a description of the vast rôle which each plays in the successful operation of the universe. The authors have had great experience not only in board of health laboratory work but likewise as soil bacteriologists and agriculturists. This is well reflected in the masterly manner in which the entire subject is handled.

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Eugenics, Genetics, and the Family, Vol. I; Eugenics in Race and State, Vol. II. *Scientific papers of the Second International Congress of Eugenics held at the American Museum of Natural History, New York, September 22-28, 1921. Charles B. Davenport, chairman, H. H. Laughlin, secretary, committee on publication. Baltimore: Williams and Wilkins Company,* 1923. *Vol. I, 439 pages and 42 plates; Vol. II, 472 pages and 33 plates.* Price, either volume, $6.00; both volumes, $11.00.

The Congress brought together in New York in September, 1921, four hundred of the leading students of heredity, of statistics, of anthropology, and of eugenics from the United States, England, France, the Scandinavian countries, Italy, Czecho-Slovakia, and the South American countries.

One of the world's great paleontologists, geologists and biologists spoke to the Congress: "I doubt if there has ever been a moment in the world's history when an international conference on race character and betterment has been more important." The presence of so many leaders resulted in the presentation of the most important papers on eugenics and heredity that have yet appeared.

These papers are published in two volumes, splendidly illustrated. No less than fifty illustrations of exhibits, about twenty-five to each volume, appear. The genetic and anthropological papers naturally fall into one group—Eugenics, Genetics, and the Family. The papers on genealogy and applied genetics appear under the title Eugenics in Race and State.

Volume I contains the results of some of the most advanced and best known investigators in genetics. They give an insight into the phenomenal progress that has been made in the past twenty years in the field of heredity. The analysis of human families is of prime importance in eugenics, and the first volume contains more than one hundred pages of reports on biological researches on families and the results of human matings.

In Volume II a series of papers on eugenics applied to state problems is introduced by Major Darwin's masterly discussion of "The Field of Eugenic Reform." First are considered problems of population, then marriage and parenthood, and eugenical sterilization. The eugenical factor in relation to disease is discussed in eight papers, in relation to education in five others; in relation to immigration in two others. The social and governmental relations of eugenics are stressed and a plea is made for further research.

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Social Work in Hospitals. *Ida. M. Cannon, R.N., Chief of Social Service, Massachusetts General Hospital. New York: Russell Sage Foundation,* 1923. Pp. 247. Price $1.50.

This work by one of the pioneers and developers of hospital social service has now passed through five editions. The latest has been revised "to make clear the present status and trend of the work in its application to and its integration with medical institutions." The author very forcibly brings forth arguments for the need in every hospital and sanatorium of a group trained to interpret and appreciate the medical aspects of the individual case, but whose principal duty is to so adjust and mold the mental, moral and physical problems of the afflicted that he may not only receive maximum benefit for himself, but that the community may not suffer needless financial and economic loss. "While the hospital management may be unconscious of its social significance, the ultimate test of its usefulness is the flexible adjustment between its perfected machinery and the changing needs of the community from which its patients and its financial support are drawn."

Various types of medical-social problems are discussed and cases are reviewed. These should be very beneficial to the student of social service although as the author states each case must be handled independently, and the services of the worker depend upon his understanding of the fundamentals of human nature and the problems of life, rather than his ability to apply some established and fixed rule.

PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

Standard Methods of Milk Analysis.—A brief report was given indicating the present status of routine analytical methods for the analysis of milk standardized by the Laboratory Section of the American Public Health Association. An explanation was given of the nature of the reorganization recently accomplished by this Association. This has placed the control of all standard methods under a general committee on Standard Methods who have appointed a series of referees. The following changes in the present Standard Methods for Milk Analysis were recommended at a recent meeting of the Association held in Cleveland, October 16th to 19th. 1. That the methylene blue reduction test be included in the fourth edition of the Standard Methods for Milk Examination as a provisional method; and that the ratio between the official plate count and the count of individual bacteria by direct microscopic examination be placed at 1:4 instead of 1:5 as in the present report. 2. That the chemical methods of the Association of Official Agricultural Chemists be adopted as the standard methods of the American Public Health Association and incorporated in the fourth edition of the Standard Methods for the Examination of Milk.—Robert S. Reed, *Absts. of Bact.*, 7, 85, 1923.

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Blood Cultures.—An explanation was given of the methods used for blood cultures and the results obtained. It was emphasized that this procedure is one which should more often be used by the physician. The extreme care necessary to avoid contaminating bacteria and the lack of methods which are not cumbersome have prevented extensive employment of this laboratory investigation. Bacteriologists should attempt to simplify the methods and advocate the study of disease by bacteriological examination of the blood.—O. W. H. Mitchell, *Absts. of Bact.*, 7, 86, 1923.

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Bacterial Counts of Milk as Obtained by Various Media.—One hundred samples of milk were plated with each of seven different media, an incubation temperature of 37° C. for 48 hours being used. Assuming the average of all counts obtained from the standard extract agar as 100 per cent, each of the averages from the other medium show the following relationships to the standard extract agar results (100 per cent); previous standard infusion agar, 124.4 per cent; Bacto dehydrated agar with milk, 153.2 per cent; dehydrated milk agar as prepared by the Research Department of the Dry Milk Company, 167.6 per cent. Milk agar (Ayers) prepared with spray process milk powder, 170.9 per cent; milk agar (Ayers) prepared with Just hot cylinder process milk powder, 177.2 per cent. On the basis of the number of highest and lowest counts obtained from each medium, the greatest number of highest counts and the smallest number of lowest were obtained from the media containing milk. From those media which did not contain milk, the reverse is true and of this group the results from the standard extract agar were least favorable.—G. C. Supplee and G. E. Flanigan, *Absts. of Bact.*, 7, 85-86, 1923.

✤

Serological Factors of Natural Resistance in Animals on a Deficient Diet.—The sera from animals which had been maintained upon a rickets-producing diet show certain differences when compared with sera from normally fed animals. The outstanding feature is the marked difference in the bactericidal titers; values for the most active sera among the rachitic animals being well below the lowest values secured from the normal animals. The complement titrations show but little variation, and there appears to be little if any correlation between complementing activity and the bactericidal values of the serum. The phagocytic indices, while subject to considerable variation within each group, appear in general somewhat lower among the animals fed upon the deficient diet. It is not suggested that these changes may be fundamental or that they may be directly associated with the defective diet. It is indeed much more probable that they are indirect, being dependent upon a modified cellular activity induced by failure to provide a proper regimen.—G. H. Smith and L. M. Wason, *Jr. of Immunol.*, 8, 195, 1923. R. L. K.

Observations of Kahn Precipitation Reaction for Syphilis.—Author discusses numerous phases associated with the precipitation test proposed by him. Believes that the Ring modification suggested by Herrold is not quite as dependable as the regular precipitation test, although in the hands of some workers it should give results. Regarding the status of the precipitation test, author states that it is essentially a test for laboratory workers and not for general practitioners. Furthermore, until investigated on a larger scale, the test should be used only as a check on the Wassermann. In such cases where the Wassermann test cannot for any reason be employed, a + + + + and + + + reaction may be considered specific.—R. L. Kahn, *Am. Jr. of Syphilis*, 7, 389, 1923. R. L. K.

✤

Zone Phenomena in Complement Fixation with "Residue Antigens."—Studies confirm the work of Dean who showed that the relative proportion of antigen and antibody is of the greatest importance in both precipitation and complement fixation reactions. They also demonstrate the practical point that astonishingly minute amounts of antibody or antigen may be demonstrated by complement fixation, provided the antigen, or, conversely, the antiserum used in the experiment is employed in a series of diminishing amounts, and, what is of still more practical importance, it shows that unless this procedure is adopted, antigen or antibody which is actually present may be overlooked. This seems to have important bearing upon the search for antigen or antibody in conditions of hypersensitiveness in which negative findings are often used as the basis for far-reaching theoretical conclusions. The experiments further confirm the important bearing on results of the sequence in which the various components of the reaction are mixed in the test tubes, the strongest results in complement fixation being obtained if the complement is present from the beginning when antigen or antibody meet.—J. T. Parker, *Jr. of Immunol.*, 8, 223, 1923. R. L. K.

✤

Arsenic Content in the Blood at Various Intervals After Intravenous Injections of Salvarsan—Quantitative Studies in Syphilis IV.—Analysis of blood taken immediately after the completion of the injection showed that 60 per cent of the arsenic injected has been localized outside of the blood stream. The maximum quantity of arsenic in the blood stream based upon average values is found immediately after injection. This value expressed in milligrams of metallic arsenic per 100 grams of dried specimen is 4.21. Observations at later intervals up to one day indicated that the arsenic equilibrium in the blood gradually becomes lower, based on average values. Certain individuals having an arsenic idiosyncrasy or predisposition to arsenical intoxication show abnormal values both high and low for any given interval.—J. A. Fordyce, I. Rosen and C. N. Myers, *Am. Jr. of Syphilis*, 7, 225, 1923. R. L. K.

✤

The Estimation of Small Amounts of Carbohydrates by Bacterial Procedures.—Authors call attention to the fact that bacteria are potentially sugar analysts and they believe there are great possibilities in the employment of bacterial agents for the detection and identification of even small amounts of sugars. Since the action of microbes on carbohydrates manifests itself in general by an increase in hydrogen-ion concentration of the medium, they have evolved a method which is dependent upon the use of a chemical indicator for detecting the change, as well as the rate and extent of such change. The medium used is a neutral buffered peptone solution. A 1 per cent solution of the sugar to be tested is made, set aside until equilibrium is reached and filtered through a sterile stone filter. The organism selected is grown at least three successive days before the test. Detailed description of the procedure is included in this study as well as tables of results with reference to the action of B. coli upon levulose. The authors feel that the method is of sufficient delicacy to permit of the detection of minute amounts of carbohydrates—as small as one hundred-thousandth of a gram per cubic centimeter.—A. I. Kendall and Shigeya Yoshida, *Jr. of Inf. Dis.*, 32, 355, 1923. R. L. K.

✤

Carbohydrate Identification by Bacterial Procedures.—The author believes that while at present serums and various organic food substances are applied to the diagnosis and identification of bacteria or their products, the time has come when the reverse procedure, the use of bacteria and their products for the diagnosis of certain groups of organic substances, may be considered with advantage. In this communication, the author discusses particularly the application of bacteria to the

identification of closely related carbohydrates. He recognizes that the first step in the definite application of microbic reagents to carbohydrate identification is the establishment of certain standards and mentions two independent factors: First, a set of carbohydrates of unimpeachable purity suitably made up into nutrient mediums; and, second, a library of microbes to act on these carbohydrates in known and constant ways. The author studied 25 carbohydrates with about 200 different cultures. In this paper he presents only the salient facts relating to the identification of the more common sugars—glucose, fructose, mannose, galactose, lactose and sucrose. This furnishes illustrative material for indicating the method of procedure for identifying carbohydrates by microbic agents.—A. I. Kendall, *Jr. Inf. Dis.*, 32, 367, 1923. P. L. K.

✚

The Measurement of Carbohydrate Mixtures by Bacterial Procedures.—In this paper the author considers particularly methods by which unknown sugar mixtures may be analyzed by the use of bacterial agents. He gives a table of standard organisms to be used. A concrete example illustrates the use of several of these organisms in analyzing a sugar mixture. The procedure is given and results tabulated. In their interpretation of the data, the authors show that not only can the various sugars in a mixture be detected, but a fairly accurate estimation of their concentration made.—Arthur Isaac Kendall and Shigeya Yoshida, *Jr. Inf. Dis.*, 32, 369, 1923. P. L. K.

✚

Carbohydrate Configuration and Bacterial Utilization.—In this study the authors discuss the relation between the stereo configuration of carbohydrates and carbohydrate utilization by microbes having a corresponding asymmetry of the protoplasm. This principle is discussed in particular with reference to the hexose sugars and their derivatives. The authors note certain group tendencies, as for example, the inability of most staphylococci to ferment any except the aldose-ketose sugars, and the failure of the proteus group to utilize fructose and mannose configurations. On the other hand, with the exception of mannosaccharic acid and mucic acid, the mono and dicarboxyl acids derived from these hexoses are nearly as adaptable to the energy requirements of the microbes as the sugars themselves. The noteworthy refractoriness of dulcitol among the hexatonic alcohol derivatives is noted. Attention is called to the influence of the terminal group in the hexose sugars and their derivatives on microbic utilization.—A. I. Kendall, R. Bly, and R. C. Haner, *Jr. Inf. Dis.*, 32, 377, 1923. P. L. K.

✚

Etiology of Spontaneous Ulcer or Stomach in Domestic Animals.—Observations in this study are based upon intravenous inoculations of rabbits and dogs with a streptococci isolated from ulcers of hog, cow, calf, sheep and dog. Seventy-eight animals were inoculated and thirty strains of streptococci were used. The author reports 86 per cent of the inoculated animals showing lesions in the stomach or duodenum. Such results were not obtained with streptococci of similar morphology from sources other than ulcer. He concludes: "Ulcer of the stomach in animals, as in man, is apparently often due to localized blood-borne infection by streptococci having selective affinity for the mucous membrane or other parts of the stomach."—E. C. Rosenow, *Jr. Inf. Dis.*, 32, 384, 1923. P. L. K.

✚

The Effect of Gambusia Affinis on the B. Coli Index of Pollution of Water.—Reservoirs sometimes constitute sources of mosquitoes, making it desirable to stock them with top minnows. The intestinal flora of two lots of Gambusia were studied, one from known sewage-polluted water, the other from unpolluted water. No organism resembling B. coli was found. Invariably, only two organisms were found—B. pyocyaneus, and a large, unidentified gram-negative spore-forming bacillus. It was also found that one or two days after an aquarium containing minnows was heavily inoculated with B. coli, no B. coli could be recovered; whereas, in a control tank, without fish, B. coli could be recovered much later. The addition of one loopful of B. pyocyaneus killed the B. coli of a twenty-four hour broth culture in three days. The spore-forming bacillus did not inhibit B. coli. Hence, negative tests for colon bacilli cannot be relied upon as evidence of absence of water pollution, when Gambusia is present in water under examination. Leon C. Havens and Sophie A. Dehler, *Am. Jr. of Hygiene*, 3, 296, 1923. E. S.

✚

A Suggested New Method for Disinfection of Hides and Skins for Anthrax.—Existing methods for disinfecting skins are un-

satisfactory. The author attempts to find an effective method of disinfecting skins quickly, in bales or loose piles. Chlorine, bromine, iodine, phosgene, carbon tetrachloride, trichlorithylene, sulphur dioxide and ammonia were all tested on spore infected samples. Iodine alone proved effective and in no way injured the hide. Iodine was then used in three ways; in vapor form, in wet disinfection, using water to dissolve iodine, and wet disinfection using carbon tetrachloride as a solvent. All three ways proved satisfactory.—Henry Smith and Edwin F. Pike, *Am. Jr. of Hygiene*, 3, 224, 1923. E. S.

✚

The Diagnosis of Doubtful Cases of Tuberculosis by Examination of Bile Obtained Through the Duodenal Tube.—In questionable or doubtful cases of pulmonary tuberculosis, in which routine sputum smears have failed persistently to reveal tubercle bacilli, it is recommended that guinea pig inoculation be resorted to, using for this purpose sputum and gastric and duodenal contents and bile obtained by means of the duodenal tube and a duodenal douche of magnesium sulphate solution (Meltzer and Lyon). In a series of 12 such cases in adults there were two in which the bile alone was capable of infecting guinea pigs, while the sputum and gastric and duodenal contents were negative. In the case of seven children in an orphanage, exposed to two fatal cases of severe pulmonary tuberculosis, tubercle bacilli were found in the bile of one of the contacts by this method, thus clarifying and corroborating the clinical and roentgenological findings in these cases. Where the possibility of milk contamination exists this should be guarded against by testing the strain of bacilli found, preferably by rabbit inoculation.—Harold Freed and Louisa T. Black, *Am. Review of Tuberculosis*, 7, 174, 1923. M. C.

✚

Bactericidal Action of Colloidal Silver.—Colloids of silver salt have a high germicidal value, especially colloidal silver chloride. This is nonirritating and does not stain unless it is exposed to light before it is washed. This preparation gives off emanations which prevent the growth of bacteria, but are not irritating to mucous membranes when used in a strength giving it a greater germicidal value than carbolic acid. Its selective action against bacteria is shown (Funke) by the fact that a 5 per cent solution of colloidal silver chloride, diluted 400 times, killed typhoid bacilli in two and a half minutes whereas spermatozoa could lie 20 minutes in a 1 per cent solution. A 5 per cent solution diluted 4,000 times and mixed with an equal quantity of secretion containing actively motile spirochetes stopped their movements in four minutes. These facts justified its use in 300 patients with genito-urinary troubles, and experiments are in progress to discover whether it will prove useful in tuberculous infections. Good results have been obtained in abscess cavities, fistulous tracts and in wet dressings for infected wounds, mastoid incisions, etc. Rabbits artificially infected with staphylococcus aureus and infected intravenously with 1 c.c. of a 1 per cent preparation, had sterile blood within 24 hours, while controls died in from 48 to 72 hours.—The Germicidal Character of the Emanations from Colloids of Certain Silver Salts (Preliminary Report), E. G. Ballenger and O. F. Elder, *Surg., Gynec. & Obstet.*, July, 1922, XXXV, 57; *Am. Review of Tuberculosis*, 7; *Abstr. of Tuberculosis*, 87, 1923.

✚

Statistics on Relation Between Infected Side and Prognosis in Pulmonary Tuberculosis.—Statistical study reveals that infection occurring on the right side in the lung is more common than on the left side, and infection occurring on the left side has a poorer prognosis than on the right side.—A Statistical Contribution on the Relation Between the Infected Side and the Prognosis in Pulmonary Tuberculosis, Keiji Aoyama, Osaka Igakkawai Zasshi, February, 1922, XXI, No. 2, *Abst. Japan Medical World*, August, 1922, ii, 241; *Am. Review of Tuberculosis*, 7; *Abstracts of Tuberculosis*, 88, 1923.

✚

Ischiorectal Abscess Followed by Gas Gangrene; Gas Gangrene Following Trauma.—In the five days from February 27 to March 4, 1923, there were two deaths from gas gangrene at St. John's Long Island City Hospital. The first infection was of the scrotal, perineal and ischiorectal regions and followed ischiorectal abscess; the second gas infection followed a crushing injury to the left leg. In each case the diagnosis was substantiated by bacteriologic and postmortem examination. The authors conclude that the lesions of the gastro-intestinal tract or adjoining tissues may be the seat of gas bacillus infection. Gas bacillus infection is probably communicable through fomites. The gas

bacillus is demonstrable in the "exploded" muscle tissue of the local focus. Although, extensive acute changes occur in the spleen, kidneys, liver and brain, the organisms are not demonstrated in these tissues, but may be recovered by cultural methods.—S. G. Berkow, M.D., and Nathan R. Tolk, M.D., *Jr. Am. Med. Assoc.*, 80, 1689, 1923. C. C. Y.

✚

Ulcerative Stomatitis and Its Treatment by the Intravenous Injection of Arsenic.—As pointed out by the author, the term ulcerative stomatitis is applied to either an acute infection of the gums or to a condition characterized by small ulcers on the buccal mucous membrane with no involvement of the gums. The term Vincent's angina, trench mouth, suppurating gingivitis, refer to an acute infection of gums caused by the invasion of spirilla and fusiform bacilli. A study was made of twenty-five cases of ulcerative stomatitis due to infection by Vincent's organisms which were treated by arsenical compounds either intravenously alone, or combined with local applications. One patient died shortly after the injection as the result of an intercurrent disease. The other twenty-four were cured in an average of five and one-half days after the first injection. The cure in every case appeared to be permanent. In 40 per cent of the cases the gingivitis was accompanied by ulceration of the mucous membrane of the tongue and inner aspect of the cheeks. These ulcers, as a rule, did not appear to respond readily to the arsenical medication, and it is probable that they were not a manifestation of the same infection which produced the gingivitis but rather the result of a secondary pyogenic infection.—Edward A. Morgan, M.B., Toronto, *Am. Jr. of Dis. of Children*, 25:354, 1923. C. C. Y.

✚

Clostridium Botulinum Resistance of Spores to Moisture.—At 100 degrees C. the spores of Clostridium botulinum in sealed tubes exhausted to 17 mm. vacuum were killed within five hours; at 105 degrees C. within two hours; 110 degrees C. within one and one-half hours; at 115 degrees C. within forty minutes; and at 120 degrees C. within ten minutes. Spores of the same age but in open tubes required a longer period of heating to destroy than those in the sealed and exhausted tubes. The authors support the contention of Weiss that the destruction of the spores is a gradual process. Surviving spores have their inner structure so impaired that they are capable of producing only weak toxins.—Fred W. Tanner and Forrest D. McCrea, *Jr. of Bact.*, 8, 269, 1923. C. C. Y.

✚

The Increase in Virulency of Non-Pathogenic Microörganisms by Chemical Substances.—An attempt to increase the virulence of B. proteus and B. subtilis by the addition of lactic acid was made with negative results. The organisms used for the study were a strain of B. proteus obtained from Prof. Kendall and an old laboratory strain of B. subtilis. Plain Liebig peptone bouillon was used as a fluid medium and 2.5 per cent agar was added to make solid medium. One c.c. of a 24 hour culture of the experimental organism in 0.17 per cent lactic acid broth; 1 c.c. of a 24 hour culture and 1 c.c. of 0.85 per cent lactic acid were injected subcutaneously in the back of two different mice. One c.c. of a 24 hour culture in plain bouillon and 1 c.c. of 0.85 per cent lactic acid were injected in the same manner in two other mice; these served as control. This was repeated six times, making a total of 24 mice in the whole series. All mice were alive after a 30 day observation.—R. A. Lee, B.S., and Lloyd Arnold, M.D., *Jr. Lab. and Clin. Med.*, 8, 462, 1923. C.C.Y.

✚

Stable Suspensions of Auto-Agglutinable Bacteria.—Suspensions of streptococcus hemolyticus were stabilized by the addition of NaOH, a method based upon the fact that agglutination occurs whenever the electric potential between the organism and the surrounding fluid falls below a certain critical value. The charge on organisms in general is negative in alkaline and positive in acid media. It was found that the charge may be increased and the suspensions made more stable by addition of alkali or acid, or acid in such a way as to bring the suspension to a pH from the isoelectric point. (*Jr. Gen. Physio.*, 4:639 and 5:127). Technique with tables of results are given.—Paul DeKruif, Ph.D., and John H. Northrop, Ph.D., *Jr. Exp. Med.*, 38:647, 1923. C.C.Y.

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NOTICE

Each month we desire to publish in the *Laboratory Notes* 2 or 3 short articles (not exceeding 250 words) dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the 15th of each month.

C. C. YOUNG

VITAL STATISTICS

LOUIS I. DUBLIN, Ph.D.

New York State Vital Statistics Reporting.—The cities and rural area of New York state, beginning with data for January, 1923, are to be shown in the Monthly Vital Statistics Review by new population groupings. Heretofore, the urban area has included all the incorporated cities shown individually and grouped according to first, second and third classes, with all districts exclusive of these regarded as rural. Certain large villages, characterized by urban conditions have been included in the rural area. Henceforth, these monthly tables will show as urban each incorporated district, whether village or city, of 2,500 population or over, according to the 1920 U. S. Census, thus providing a better basis for comparison with areas outside of New York state. The rural area will include all incorporated villages and cities of less than 2,500 population, and all townships or unincorporated places, regardless of their size. This classification will approximate much more closely a truly rural population than that heretofore used.—*New York State Monthly Vital Statistics Review*, 4:2, March, 1923.

✤

France, Vital Statistics for 1922.—The recently published vital statistics in France for 1922 are in general less satisfactory than for the two years preceding, especially as regards the birth rate. The excess of births over deaths in 1922 was 70,579 as compared with 117,023 in 1921 and 159,790 in 1920. There were also fewer marriages, divorces and deaths as compared with 1921. The demographic situation of France was worse than that of the two previous years, though slightly better than that of the years immediately preceding the war. It still remains unfavorable as compared with that of other nations. While the population of France increased in 1922 only 70,579, that of England grew to the extent of 293,358 and that of the Netherlands to 101,389—figures for the other countries not being received as yet.—*J. A. M. A.*, 80:1532, May 26, 1923.

✤

Birth and Mortality Statistics in the Large Cities of Germany, 1922.—The year 1922 was marked by a very low ebb in the birth rate. The average birth rate in 46 German cities classified as having over 100,000 population was in 1921, 20.1 per 1,000 population, whereas in 1922 it dropped to 17.3 per 1,000, a decrease of 13.9 per cent. This fall, due largely to the influence of unfavorable economic and housing conditions, has proceeded uninterruptedly, even compensating for and eliminating the usual seasonal variations. The increase in marriages after the war does not seem to have affected the rate. The death rate of these large cities, excluding foreigners, is not unfavorable, 13.4 as compared with the rate for 1921, 12.6, the lowest death rate ever recorded. The tuberculosis mortality rate increased somewhat in 1922, due probably to the hard winter. The pneumonia mortality rate for the first nine months was also high. On the other hand, cases and deaths from scarlet fever, measles, diphtheria, typhoid fever, dysentery and catarrh of the gastro-intestinal tract reached a previously unknown low level. The mortality from puerperal fever which increased considerably during the war period appears to be on the decrease. In 1922 there were 3.9 deaths per 1,000 as compared with 4.3 in 1921.—*J. A. M. A.*, 80, June 2, 1923, 1632-33.

✤

Public Health in Bombay.—The population of Bombay at the census of 1911 numbered 979,445 and all the rates since then have been based on that figure. The provisional figure for the 1921 census is 1,172,953. The birth rate is considered to be 27.53 per 1,000, although actual returns give only 20.14. The rate was 21.16 in 1919 and 21.51 from 1915-1919. This varied among the different races from 14.04 for Europeans, 19.48 for Hindus to 26.74 for Anglo-Indians.

The general death rate was 46.80 per 1,000 as compared with 70.04 in 1919 and 39.56 in 1910-19. The infant mortality (552 per 1,000 live births) was less than that of 1919 (655) but higher than the decennial average (439). Among the Parsis whose standards are high the infant mortality rate was 199, as compared with that of Europeans, 311. Health work is having effects on infant mortality.

It is noteworthy that 1920 was the first year since 1896 during which there was no epidemic of plague, the mortality being .28 per 1,000

as compared with 1.25 for the preceding quinquennium. Inoculation, rat destruction, vaccination and disinfection were carried out systematically and with success. Smallpox caused 294 deaths or 0.30 per 1,000 compared with 0.79 in 1919 and 0.70 in the quinquennium. At the Arthurroad hospital, the case mortality was 35.7 per cent among 6,064 unvaccinated smallpox patients, while it was 14.5 among 7,413 vaccinated patients. Influenza was prevalent throughout the year. Tuberculosis caused 1,841 deaths (187 per 100,000) of which 1,631 were due to phthisis.—*Lancet*, 1:937-938, May 5, 1923.

✤

Public Health Progress in Czechoslovakia in 1922.—Several important public health laws were enacted in 1922. Local health officers will be part time and the salary will be larger in poor districts. The venereal disease law makes treatment of venereal disease obligatory and provides free treatment for those unable to pay. The regulation of prostitution was abolished. Complete tuberculosis and venereal disease surveys of the state have been made and one on infant mortality is being prepared. The ministry is developing a division of public health. A demonstration in rural hygiene was started in Kvasice. The organization of health centers has been continued. Twenty-one child health stations created by the Red Cross have been included in their scheme. A number of tuberculosis dispensaries were created.—Hynek Pelc, *Nation's Health*, 5:266, May, 1923.

✤

Public Health in Egypt.—The estimated population for Egypt in 1920 was 13,066,600, compared with 12,667,370 in 1919. The birth and death rates were 42.8 and 28.3, respectively, as compared with 38.0 and 30.0 in 1919. In the twenty principal towns the average birth rate was 45.3. There were 3,004 cases of smallpox, of which 2,720 occurred in the first six months of the year. Vaccination has been carried out energetically; more than one-third of the population were vaccinated during 1919 and 1920. In Cairo there were 171 cases in 1920 as compared with 1,569 in 1919. The case mortality was 26.48 per cent higher than any year in the decennium except 1916. The cases and deaths from typhus fever, relapsing fever, and plague declined in 1920 as compared with 1919, although the case fatality for plague in 1920, 58.2 per cent, was higher than in 1919, 53.9 per cent. The notified cases of malaria numbered 1,870 as compared with 1,683 in 1919; 1,594 of these occurred in one province.—*Lancet*, 1:881-882, April 28, 1923.

✤

Philippine Islands—Child Welfare Work.—Child welfare work started in 1880 when a Filipino physician took up the study of a pseudo-epidemic which resembled "infantile beri-beri." In 1886 a contest was held in Manila to study the disease and in 1904 Dr. Manuel Geurrero identified it with "infantile beri-beri." The National League for the Protection of Early Infancy was organized in 1913 by a number of prominent Filipino physicians. A child welfare center was established first and a milk station later.

The government created a committee on infant mortality in 1912, to study the high infant mortality rate due to beri-beri. In 1914 the treatment by rice bran, found to supply the lack of vitamins in the mother's diet, was instituted and widely distributed free of charge.

In 1916 the legislature appropriated 1,000,000 pesos for infant welfare work, and in 1919 the Public Welfare Commissioner, Dr. Fabella, was sent to this country and to Europe to study the maternity and infancy programs. A wide campaign and many new infant welfare centers were brought about on his return, and through his efforts the first National Conference on Infant Mortality and Public Welfare was held in the Philippines, December, 1921.—Miss Socono Salamanca, *Amer. Chil. Hy. Assoc., Thirteenth Annual Meeting*, 1922, pp. 253-254.

✤

A New Zealand Study in Seasonal Fluctuations of External Migration With Special Reference to the Computation of Mean Annual Populations.—The abnormally low death rate in New Zealand has been attributed to defective counting. The vital statistics are very accurately compiled and the low death rate is due to the many favorable circumstances of the country. The quarterly intercensal estimates of population are arrived at by adding to the last census figure the number of immigrants and of births, and by subtracting the number of deaths and emigrants. This estimate has never had a discrepancy of more than 7,000, while Australia had a discrepancy of 70,265 in 1911.

From March through July there is, all migration considered, an excess of emigration over immigration. From July to March the situation is reversed. There is a constant

excess of immigration over emigration to the United Kingdom. There is little seasonal fluctuation in immigration, most of it being permanent. It is more marked than emigration. Monthly rather than seasonal fluctuation is seen in migrations to and from Australia, because of Christmas visits, travels to escape the winter season, movements of sheep shearers, etc. Immigration attains a maximum before emigration. There is always greater mobility of males. In estimating mean populations consider the population at the end of each of the four quarters of the year and also the population at the end of the year.—E. P. Neale, *J. Royal Stat. Soc.*, 86:226-241, March, 1923.

✤

Tuberculosis Among Different Nationalities in New York.—There are tremendous racial differences in tuberculosis as shown by the variations in the death rate during the period of 1918-1921. It varies from 398 among the negroes, 342 among the Finns, 306 among the Irish, to 92 among the Roumanians and 86 among the Russians (chiefly Jews). These racial differences are being inherited but the inheritance of to-day was the environment of yesterday. It is an interesting fact that the higher rates appear in those race stocks which are still, or only recently, coming from agricultural countries and that better resistance to tuberculosis is found among people who have been undergoing the process of tuberculization for longer periods and especially in cities or towns. The negroes, the Irish and the Finns are mainly agricultural peoples, while the Jews have lived in congested parts of cities for generations.—*N. Y. T. B. Assoc. Bul.*, 4:3-6, June, 1923.

✤

A Clinical Study of Trichinosis With Case Reports.—The occurrence of infection with trichinella spiralis is greater than is ordinarily supposed. Sixty-five cases have been reported in Massachusetts from 1911-1920 with 15 deaths or a mortality of 23 per cent. The mortality in the United States is claimed to be about 5 per cent. It is stated that 6 per cent of American swine are infected, although Osler gives 1.04 to 1.95 per cent as the figure. The incidence of constipation and diarrhea and the degree of eosinophilia are not accurate indices of the severity of the infection as has been previously thought. Muscular pain and tenderness, the history of pork ingestion, a high eosinophile count, edema of the lids, and gastro-intestinal symptoms are the most important clinical points in establishing a diagnosis. Respiratory signs have been encountered as frequently as previously reported. Unmistakable diaphragmatic paralysis is rare. Thorough cooking of pork is the most important prophylactic measure.—Joseph Garland, *Boston M. & S. J.*, 188:773-776, May 17, 1923.

✤

Activities of the Philadelphia Department of Public Health in the Interest of Negroes.—The total death rate for the negroes in Philadelphia has been about 5 per 1,000 higher than that of the white population for the past 17 years. The negro death rate from tuberculosis in 1922 showed an excess of 173.98 as compared with the excess in 1905 of 228.51. In representative wards the population of white persons to a room was 1.04 as compared with that of colored persons 1.18. The negro housing conditions were not unfavorable. The breast-feeding of white babies averaged 8.3 months and the colored babies 6.5 months. It was thought that the high death rate from tuberculosis was due to overcrowding and lack of a good start in life, but this is evidently not true. Negro health week has done much to improve conditions among that race.—*Monthly Bul. Philadelphia Dept. of Health*, 8:21-22, January, February and March, 1923.

✤

The Distribution of Malaria in the United States as Indicated by Mortality Reports.—The study of mortality rates from malaria indicates that the disease is largely confined to the Coastal Plain, reaching its widest distribution in the lower Mississippi valley. The distribution of the disease is not uniform but local in character. Areas of high prevalence are found chiefly about the mouths of large rivers along the coast, particularly in the delta lands of the Mississippi and along the valleys of its large tributaries.

Malaria is essentially a rural problem. In Arkansas, Louisiana, Mississippi and Florida a large proportion of the population is affected by the problem, while in the other states it is more or less limited to certain sections of each state. While there has been a general decrease in incidence of the disease in the past few years, this does not hold true for all parts of the country. Mortality records indicate a definite increase in incidence for the Mississippi valley during the year 1921.—Kenneth Maxcy, *Public Health Reports*, 38:1125-1138, May 25, 1923.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Albany, New York, Electrifies Water Purification Plant.—Recent improvements to the filtration plant, and investigation into comparative reliability, economy and performance characteristics led to the replacement of steam driven pumps by electrically driven apparatus. Raw water delivered to an open well is pumped into the sedimentation basin and then pumped to preliminary rapid sand filters from which it flows by gravity to the secondary slow sand filters after which it is analyzed and chemically treated when further purification is necessary.—*American City*, 28:5, 446, May, 1923.

✚

The Results of a Three Years' Survey in Boston, Mass.—Water-waste survey to date has covered 600 miles of mains or about 70 per cent of the total length of mains. To the end of 1922, 296 separate leaks have been located, 244 of which were in lead services; 44 in blown joints, 2 broken mains and 6 miscellaneous. These leaks ranged from 5,000 to 90,000 gallons per day. A total of approximately 10,250,000 gallons per day of leakage has been discovered and stopped.—F. A. McInnes, *American City*, 28:5, 465, May, 1923.

✚

Survey in Grand Rapids Untangled Distribution Troubles.—Water-waste survey completed at cost of $10,000. No large or serious leaks were located but the survey was of great value in locating broken valves and in straightening out the distribution system which was cross-connected.—Walter A. Sperry, *American City*, 28:5, 466, May, 1923.

✚

Survey in Detroit Shows Considerable Loss in Small House Meters.—Survey recently completed covered 1,151 miles of main, 24 inches and under in diameter. A total underground leakage of 9,557,000 gallons per 24 hours was detected and repaired.—Carl O. Barton, *American City*, 28:5, 466, May, 1923.

✚

Baltimore City Water Department Finds that the Cost of a Water-Waste Survey is Justified.—In an area of 5.93 square miles having 152.74 miles of water mains and a population of 163,015, the pitometer survey has reduced the consumption by 6,499,280 gallons, a saving of 21 per cent. This water if sold would net a yearly return of $218,937.60. —*American City*, 28:5, 467, May, 1923.

✚

Water-Waste Surveys are Enlightening.—Results obtained were worth many times the cost of the survey to Herkimer, N. Y.—Arthur T. Clark, *American City*, 28:5, 469, May, 1923.

✚

Running Down Losses in Ogdensburg, N. Y.—A total underground leakage of 430,000 gallons per day was found.—Chas. H. Lord, *American City*, 28:5, 469, May, 1923.

✚

Breaking of Frozen Idle Mains Caused Large Loss.—One leak discovered where water was turned off every winter. Some water apparently was left in the mains and on freezing burst the pipes. Owing to the nature of the soil no water came to the surface, and water at the rate of 100,000 gallons per day was being lost.—H. M. Beardsley, *American City*, 28:5, 470, May, 1923.

✚

Unmetered Fire Lines a Source of Loss in Oswego, N. Y.—During 1920 an extensive survey indicated a waste of approximately 1,000,000 gallons per day through unmetered fire hydrants.—William A. McCaffrey. *American City*, 28:5, 471, May, 1923.

✚

Water-Waste Survey Helps Richmond City Water Works.—The estimated saving due to stopping underground leaks, figured at 2½ cents per 1,000 gallons, would amount to $2,500 a year.—H. A. Dill, *American City*, 28:5, 471, May, 1923.

✚

The Value of Comprehensive Water Supply Investigations.—The ultimate failure and abandonment of municipal water works stations is in most instances due to failure to conduct a comprehensive and systematic study of the community's water resources prior to the construction of the water works system.—Alex. Van Praag, Jr., *Municipal and County Eng.*, 64:4, 159, April, 1923.

✚

Hardness of Large Public Water Supplies in the United States.—Analysis of water from the public supplies of over 300 large cities in the United States show that the aver-

age hardness of surface water supplies in parts per million is 85 and of ground water supplies is 226.—*Municipal and County Eng.*, 64:4, 174, April, 1923.

✤

Report on Sewage Disposal at Hamilton, Ont.—During the period of maximum dry weather flow of sewage 70 per cent passes through the existing four disposal works, the remaining 30 per cent going direct into the bay. These plants handled an average dry weather flow of 16,700,000 gallons per day. Three alternative schemes for dealing with sewage problem. Construction of new disposal works, to consist of plain sedimentation with sludge disposal in specially prepared lagoons, is recommended.—*Canadian Eng.*, 44:18, 454, May 1, 1923.

✤

Studies on the "Electropure" Process of Treating Milk.—The lack of uniform heat distribution in the pasteurization of milk by steam has led to the "Electropurifier." The process consists of passing the milk upwards between two carbon electrodes which are embedded in the opposite walls of a hard-rubber composition material which in turn is fixed into the interior of a rectangular upright metallic box. Milk upon reaching the zone between the electrodes becomes at once the medium of electric conductivity, and as a consequence rises rapidly in temperature until the desired degree is reached, when it automatically flows out through a sensitive thermoregulator to the cooler and to the bottler. The "Electropure" treatment of milk at temperatures of 155° F. and above completely destroys B. tuberculosis, the total bacteria content of milk is reduced over 99 per cent, the keeping quality of the milk is excellent and the milk has a pleasant natural taste.—Floyd W. Robison, *Indust. and Chem. Eng.*, 15:5, 514, May, 1923.

✤

Phenol-Chlorine Water Pollution.—The city water supply, which is chlorinated, was contaminated by the effluent of a coke plant. Reaction between phenol and chlorine caused medicinal taste in canned goods. It seems that either one of the dichlorophenols other than 1, 2, 4—dichlorophenol is formed, or there results an entirely new reaction product.—Edward F. Kohman, *Indust. and Chem. Eng.*, 15:5, 518, May, 1923.

✤

Public Health and Water Consumption.—Water consumption problem in Baltimore. Relation between consumption and requirement. Requirements of the human mechanism for water for continuance of life and for proper sanitation summarized as follows: "Subsistence demand" to amount to 1½ gallons per person per day; the "sanitary demand," from 10 to 20 gallons per day; the "rational water requirement," 15 to 25 gallons with a maximum of 30 gallons; the "maximum reasonable use" 50 gallons.—Abel Wolman, *Canadian Eng.*, 44:19, 467, May 8, 1923.

✤

Preparation of Water for Filtration.—The Great Lakes and connecting rivers form major source of Ontario's water supply, and the water is extremely clear. The problems of filtration deal with the removal of color in the northern parts of the province and the Trent and Rideau valleys, the removal of iron and the removal of occasional turbidity. Two schools of thought in filter plant operation. Advantages of coagulation basins and retention tanks in dealing with colored and iron-bearing waters. Use of pressure filters.—F. A. Dallyn and A. V. Delaporte, *Canadian Eng.*, 44:19, 474, May 8, 1923.

✤

Importance of Sand and Gravel in Filtration Plants.—Value of sand lies in its permanency, high specific gravity and cheapness. Shrinkage of sand and mud ball formation. Conditions in a filter when being washed. Construction of filters.—A. O. True, *Canadian Eng.*, 44:19, 478, May 8, 1923.

✤

Imhoff Tank and Sprinkling Filter Studies at Plainfield Works.—Experiments with sewage to determine what organisms are present in sufficient numbers to carry on the digestion processes and how these organisms accomplish purification. The more abundant bacteria are those which attack the most easily digested protein material, like bacteria which attack soluble protein with the production of ammonia. Other organisms found were: bacteria producing sulphides from inorganic sulphates; bacteria oxidizing thio-sulphate to free sulphur and sulphates; bacteria which digest cellulose, and bacteria which split fats. The slimy film which accumulates on the stones of sprinkling filter beds is composed largely of a host of bacteria, a great variety of microscopic animals and occasionally an abundance of fungi.—Dr. William Rudolfs, *Eng. News-Record*, 90:18, 779, May 3, 1923.

City Planning and Zoning in Old Communities.—By-passing through traffic, store-door deliveries, decentralization of department stores and office buildings suggested.—George H. Herrold, *Eng. News-Record*, 90:18, 789, May 3, 1923.

✤

Decline in Typhoid and Other Death Rates.—Typhoid fever death rate fell from 19.1 to 5.6 per 100,000 in the eleven years between 1912 and 1922 among the risks of the industrial department of the Metropolitan Life Insurance Company of New York. Other death rates.—*Eng. News-Record*, 90:19, 828, May 10, 1923.

✤

Manganese Deposit on Water Filter at Breckenridge, Texas.—Growth of crenothrix manganifera in a force main while standing idle for three weeks is believed to have been the cause of a black, greasy deposit consisting largely of manganese, on the sand of mechanical filters.—W. S. Mahle, *Eng. News-Record*, 90:19, May 10, 1923.

✤

Importance of Oxygen and Stirring for Activated-Sludge Growth.—Air blown into aerator chamber of an activated-sludge plant, maintains the sludge in suspension, maintains aerobic conditions and stirs up the mixture, allowing fresh liquor to come in contact with the sludge. Tests indicate forced aeration unnecessary. Importance of stirring.—*Eng. News-Record*, 90:19, 835.

✤

Water Supply for a New City in India.—Water supply for Delhi, the new capital city, will be taken from the Jumna river and pumped to settling tanks from which a covered conduit will lead to filters at the present water works plant. Plant will cost $2,300,000 and will furnish 30 gallons per capita for the population of 1955 by eight hours' pumping.—*Eng. News-Record*, 90:19, 941, May 10, 1923.

✤

Technical Proceedings of Baltimore City Planning Conference.—Regional planning, city planning and progress and practice in Baltimore, and street traffic problems with particular relation to automobile parking. Eleven papers deal with Baltimore, Washington and Maryland problems.—*Eng. News-Record*, 90:19, 842, May 10, 1923.

✤

Filter and Pumping Plant at Dunnville, Ont.—Water supply from Grand River Purification plant consists of sedimentation basin and three filter units of the rapid sand type. Details of plant design.—E. H. Darling, *Canadian Eng.*, 90:20, 489, May 15, 1923.

✤

Protecting Watersheds from Pollution.—Situation at Utica, N. Y., and method of protection. Importance of hydrogen-ion concentration theory.—G. C. Hodges, *Canadian Eng.*, 44:20, 493, May 15, 1923.

✤

B. Coli and B. Aerogenes in Swimming Pools.—In examinations of two pools the gas-forming organisms when present were usually of the B. coli type in the case of the men's pool, whereas in the women's pool the gas-formers were practically always B. aerogenes. Results obtained confirm contention that B. coli and B. aerogenes are characteristically of different origin, and that differentiation of these forms in water analysis is desirable as an aid to the determination of the source of contamination.—Max Levine and C. H. Werkman, *Canadian Eng.*, 44: 20, 499, May 15, 1923.

✤

How Water System of Manila Was Put on Paying Basis.—City being 100 per cent metered, charging the city as well as all civic and religious organizations a uniform rate for services rendered, has had an annual surplus instead of a deficit of from $125,000 to $250,000, which it had previous to enactment of laws requiring above payments.—A. Gideon, *Eng. and Contr.*, 59: 5, 1032, May 9, 1923.

✤

The Use of Acids with Alum in Water Purification and the Importance of Hydrogen-ion Concentration.—Increasing the capacity of storage reservoir from 3 to 23 billion gallons, caused an increase in the amount of alum necessary for proper coagulation. Clarification of Gunpowder River water is obtained when period of sedimentation is not over 6 hours and pH extends from about 8.0 to about 4.5. Point of maximum clarification is a pH somewhere near 5.5. The use of sulphuric acid with alum for coagulating 2.2 billion gallons produced an actual saving of $1500.—John R. Baylis, *Jour. Amer. Water Works Assn.*, 10: 3, 365, May, 1923.

✤

Design of a City Water System.—Bond issue for $75,000 gave City of Davis, California, a new water supply system, to super-

sede inadequate supply furnished by manufacturing establishment. Water obtained from drilled well passes into tank or mains. An additional fire pump will increase pressure to 100 pounds per square inch. System is cross-connected with that of University of California. Farm providing emergency supply to either system.—J. D. Galloway, *Jour. Amer. Water Works Assn.*, 10: 3, 405, May, 1923.

✤

Zinc Contammination in Drinking Water.—Hygienic fitness of any water showing more than traces of zinc is seriously questioned. Comparison of effect of zinc in water with that in food which has been stored in zinc-lined containers.—Charles D. Howard, *Jour. Amer. Water Works Assn.*, 10: 3, 411, May, 1923.

✤

Valuation and Rates.—Value is defined as use, expressed in terms of dollars. Distinction between value and cost. Methods of appraising the facilities of a utility are on the basis of (1) actual investment, (2) estimated actual investment, (3) reproduction cost based on prices of material and labor as of date of rate fixing, and (4) reproduction cost based on prices of material and labor averaged over period of from five to ten years prior to the war. Rate schedule should be arranged to yield total sum the utility is entitled to earn, rates being such that each consumer pays his fair share of total expense of service.—Chester H. Loveland, *Jour. Amer. Water Works Assn.*, 10: 3, 439, May, 1923.

✤

Experiences with Water Meters at Greenville.—By metering 55 per cent of city, a reduction in consumption has been accomplished without restricting legitimate use of water, and the expenditure of a sum of money for an additional supply, several times greater than the cost of the meters, has been deferred indefinitely. Seventy per cent increase in gross revenue has put the department on a paying basis.—J. W. McAmis, *Jour. Amer. Water Works Assn.*, 10: 3, 486, May, 1923.

✤

Water Filtration Plant for Omaha Metropolitan District.—Fifty m.g.d. plant under construction, is designed so that capacity may be increased to 100 m.g.d. There are twelve filter beds of 1,400 sq. ft. effective area, rates at 4 m.g.d. each. Concrete stools in the underdrains save gravel.—F. P. Larmon, *Eng. News-Record*, 90: 20, 870, May 17, 1923.

Detroit's 320-M.G.D. Filtration Plant is World's Largest.—Eighty 4-m.g.d. units treat Detroit River water at the rate of 160 m.g.d. per acre. Coagulation basin has capacity of 30 m.g. providing settling period of more than two hours, with plant operating at maximum rate. Details of construction and costs.—Theodore A. Leisen, *Eng. News-Record*, 90: 20, 860, May 17, 1923.

✤

Refuse Utilization in England.—Newer features are automatic loading of screenings into canal boats, provision of pneumatic dust suction plant to handle dust from screens and flues, destructors for unsalable material and using the steam produced for generating electricity for lighting the plant and running machinery. Plant at Birmingham will cost about $450,000.—*Public Works*, 54: 5, 184, May, 1923.

✤

Railway Water Treatment Plants and their Operation.—Specification for chemicals. Proportioning of chemicals to suit character of water. Necessity of water analysis to vary treatment with frequent changes.—Fred D. Yeaton, *Eng. News-Record*, 90: 20, 877, May 17, 1923.

✤

Overhauling Outgrown Water Works at Fort Smith, Ark.—Extensions include four new filters, boilers, chimney, high and low lift pumps and dry chemicals feeders.—Wynkoop Kiersted, Jr., *Eng. News-Record*, 90: 20, 878, May 17, 1923.

✤

Uncontrolled Pollution of Bogota Water Supply.—Sanitary conditions on watershed are extremely bad, feces of animals and human beings being found along the road on watershed, and at Monserrate Hill a church visited by 600 to 2,000 people every Sunday has no privies of any kind, excreta being continually deposited and carried down by the rains. The river is a rapid flowing stream so that there is no chance of self-purification, and the result is high typhoid and dysentery rate. Under direction of author chlorinators were recently installed.—George C. Bunker, *Eng. News-Record*, 90: 21, May 24, 1923.

✤

Depth and Grading of Percolating Filters.—Comparison of English and American views. Conclusions from experiments carried on at Dorking, England.—*Public Works*, 54: 5, 169, May, 1923.

Construction and Operation of Warren, Ohio, Water Purification Plant.—New filtration plant built at total cost of $201,270.57. Water from Mahoning River is pumped into mixing chambers from which it flows by gravity through the coagulating basins and filters.—S. N. Vance and P. J. O'Connor, *Mun. and County Eng.*, 56: 5, 183, May, 1923.

✚

Hydrogen-ion Concentration of Natural Waters in Relation to Disease.—The effect of slight acidity in rendering water safe to drink has long been recognized in the use of tablets of acid potassium or sodium sulphate. The carbonates of potassium and sodium are readily soluble and give rise to solutions which lie well over pH 10 but under pH 11. These carbonates are readily produced in any country by burning grass or other vegetable matter and it seems that a simple means may exist for rendering water safe for drinking purposes, since the addition of these ashes might suffice to kill typhoid and cholera organisms within an ascertainable period. Suggested that water may be rendered safe by making it as alkaline as pH 10.5.—W. R. G. Atkins, *Journ. of State Medicine*, 31: 5, 223, May 1923.

✚

Iodine Treatment of Water for Prevention of Goitre.—Iodine is a natural constituent of the normal thyroid gland. It is essential to normal thyroid activity. The amount of iodine required is exceedingly small, but, when this amount is absent the thyroid gland seeks by increase in size and surface to make up for this lack in iodine and goiter is the result. In fact, goiter has been described as an adaptation of "iodine-deficient" nutrition. It follows, therefore, that the treatment for goiter, now pretty generally practiced, is the giving of very small dosages of iodine. In the region around the Great Lakes, in Detroit or Rochester, 7 out of every 100 school children are afflicted with goiter. In addition, a large proportion of all the women who consult physicians have the disease.

To prevent goiter Rochester is treating the public water supply, semi-annually for two-week periods, with iodide of soda. The first dose of 16 pounds of iodide of soda dissolved daily for a period of two weeks, increased the iodine content in the water from one to twenty parts per billion. To prevent goiter will cost less than $2,000 a year.—Beekman C. Little, *Journal American Water Works Association*, 10:4, July, 1923.

Water Works Statistics.—Tabulation of information furnished by the superintendents of more than six hundred plants, shows mains laid in 1922 and methods employed for purifying water.—*Public Works*, 54: 5, 174, May, 1923.

✚

Aeration Experiments for Removal of Carbonic Acid.—The spray nozzle was found most effective of several devices used for removing CO_2 from water by aeration, but it is objectionable because of the area and head required, the opportunities of contamination by dust and soot, and probable nuisance to adjoining property from wind carriage of spray. The coke scrubber was next to the spray nozzle in efficiency.—Wellington Donaldson, *Eng. News-Record*, 90: 20, 874, May 17, 1923.

✚

The "Melting Pot" and Babies' Lives.—Reliable statistics are of tremendous value to all health workers, and the graphs shown in Dr. Philip Van Ingen's article are convincing. He who runs may read and know that there has been a tremendous lowering of the infant death rate during the past twelve years. It is encouraging to public health authorities and to private organizations, for it proves that their efforts to put across an educational program have not been wasted. Racial influences doubtless play a definite part in the infant mortality rate of babies born in this country and the long black line which indicates the infant mortality rate of 153 for the negro babies is more than double that for the babies born of Scandinavian mothers, which is only 68—and the lowest rate of all. Again, in the infant mortality rate during the first month as compared with rates after the first month, we note that the Italian, Russian, Scandinavian and Hungarian mothers have a lower infant death rate than any of the other groups, and that the negro death rate is the highest both during the first month, and in the succeeding months. All of the factors which influence this variation can not be explained in one short article, but some of them force one to think of the human and environmental equations, and something more than dry statistics is seen. "They may also indicate again where we must direct our further efforts and activities."—*Mother and Child*, April, 1923.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

Medicine and Labor.—Great coöperation must be demanded from the working classes if we wish to build up a solid structure in industrial medicine. Employers and employees should collaborate in the drafting of laws to protect the health of workers. Workmen should be convinced that the doctor seeks information, not in an inquisitorial spirit, but for the purpose of aiding them. The object of inspections for fitness of work is to eliminate from trades entailing heavy manual work or the handling of poisonous substances those whose health might suffer in consequence and who, rejected from industry, would become a burden to society. An investigation of workers belonging to 16 different trade groups showed that the birth rate and viability of children of parents exposed to industrial poisons were seriously affected. The utility of vocational guidance may be realized when one reads the documents collected by Professor Devoto at the industrial clinic in Milan on the posterity of a family of which the father succumbed to industrial poisoning. Workmen should be urged to consult a doctor for even the smallest accidents instead of receiving first-aid from their companions. Serious consequences may follow the attempt of a fellow-workman to remove a foreign body from the eye.

Doctors who wish to take up industrial medicine should receive special training, and such training should be obtained in the factory in close coöperation with technical experts. The doctor who is to be in charge of the medical service in a big industrial plant should first spend some time in the countries where the organization of industrial medicine is most advanced.—L. Carozzi, *World's Health*, Vol. IV, No. 4, April, 1923, p. 1.

✚

Twelve-Hour Day in the Steel Industry.—"The American Iron and Steel Institute has decided to retain 12-hour day in the plants of continuous 24-hour operation on several grounds: (1) Men want it for the larger compensation it yields; (2) because 12-hour day is not physically, mentally, or morally injurious to the employees; and (3) it would compel steel industry to employ 60,000 extra men, which are not to be had—and if the 60,000 could be found it would compel an advance of 15 per cent in prices of steel."—*Industrial News Survey*, Vol. VII, No. 14, May 28, 1923, p. 5.

✚

Industrial Efficiency and Atmospheric Conditions.—The influence of atmospheric conditions on the efficiency and presumably on the health of linen weavers and laundry workers whose work is carried on under unusual conditions of humidity is brought out in two reports recently issued by the Industrial Fatigue Research Board. The weaving of fine linen is one of the most trying industrial operations known in this country, as it has to be carried on in a hot and very moist atmosphere in order to reduce breakages of yarn to the minimum. Owing to artificial humidification the wet and dry bulb temperatures of the air in the sheds seldom differ by more than 2° F., and the actual temperature often exceeds 70°. Within certain limits the higher the temperature the greater the quantity of linen woven, but at temperatures above 73° (wet bulb) the relation no longer holds. The high temperature causes such discomfort and fatigue in the weavers that their productivity falls off in spite of the more favorable physical conditions for weaving. It is also found that after due allowance is made for temperature effects the longer the working day the less was the proportionate rate of production. The same general observations were made relating to conditions in the laundry industry.—*Brit. Med. Jour.*, No. 3236, January 6, 1923, p. 36.

✚

The Retention and Elimination of Lead.—After lead has been absorbed through the gastro-intestinal or respiratory tracts, it is stored nearly completely in the calcareous portion of the bones. Here it remains normally for long periods, with the gradual release of only small amounts. In one group of animals the esophagus was tied and lead carbonate was introduced directly into the lungs. The animals were given physiologic sodium chlorid solution intraperitoneally. When the animals were killed, within 80 hours after the injection, nearly all of the absorbed lead was found in the bones. In animals allowed to live be-

tween 80 and 160 hours, only about 81 per cent of the lead was found in the bones. When sodium bicarbonate instead of salt solution was injected intraperitoneally, the amount of lead found in the bones did not diminish, but remained at 94 per cent of the total absorbed lead. This strongly suggested that the reduction of the alkali reserve allowed the liberation of lead from the bones. The investigators next found that in leaded cats starvation will cause the lead to become distributed throughout the organism and be excreted with increased rapidity. Ingestion of large amounts of phosphoric acid has a similar but more marked effect. Using these observations in treating lead poisoning in man, it was found that ingestion of acid causes a markedly increased excretion of lead by the urine and feces. Phosphoric acid is the most effective method so far found. It is more efficient than potassium iodid, and causes a fourfold increase in the rate of lead excretion over that occurring without treatment.

These experiments explain how distortion of the acid-base equilibrium may liberate lead from the bones long after its absorption; they explain why lead poisoning is a chronic disease with possible late acute manifestations, and they offer a new method for increasing or decreasing the excretion of lead.—J. C. Aub and Anne Minot, *J. A. M. A.*, Vol. LXXX, No. 22, June 2, 1923, p. 1643.

✤

Mortality of **Coal and Metal Miners.**—Dr. E. L. Collis states that in coal mining, pneumonia, bronchitis, and accidents were responsible for rates of mortality considerably above the standard of all occupied males, and diseases attributed to alcoholism and phthisis were on the other hand less deadly among coal miners than in the standard population. Mavrogordato's work may provide the clue to the possible influence of coal dust in lowering the incidence of phthisis from these workers; he exposed one group of guinea pigs to silica dust alone, a second to silica dust *followed* by coal, and a third to silica dust *preceded* by coal. His results indicated that "once silica is fixed in the lung tissue, coal exerts no eliminative effect. If anything, the influence is in an opposite direction, but that a prior or even simultaneous exposure to coal dust appears to set up a condition in the lung which is inimical to the fixation of silica." Recent work by W. E. Gye, W. J. Purdy, and E. H. Kettle, on the toxicity of colloidal silica lent interest to the somewhat high rates for Bright's disease. The conclusion suggested is that silica dust was gradually converted into soluble silica in the lungs and caused the well-known fibrotic changes, but some escaped into the blood to be excreted by the kidneys which were consequently similarly affected. In tin and lead mining not only is the general mortality rate excessive but in each the same groups of disease were prominent—viz., phthisis and Bright's disease. In tin mining much quartz dust is generated. In districts where veins of lead ore occurred in granite rock the phthisis mortality was very high but this did not obtain where the ore occurred in limestone rock.—*Lancet* (London), Vol. CCIV, No. 5205, June 2, 1923, p. 1109.

✤

Physical Examination of Minors in Industry.—While fourteen years is the minimum legal age allowed for employment, the Dennison Mfg. Company employs children under sixteen only in exceptional cases. The company is convinced that if people under seventeen are hired, physical examinations at periodic intervals are necessary in order to be sure that the work at which they are placed does not interfere with their normal development. The most striking defects noted were in relation to the teeth, vision, weight and posture. The company believes there can be no doubt but that the examinations are a real benefit to both the company and the young employees in that fewer employees are placed at jobs for which they are physically unfitted; defects are known and can be watched and by the correction of these defects there results a more efficient working force.—Louise G. Fiske, *Pub. Health Nurse*, Vol. XV, No. 6, June, 1923, p. 315.

✤

Research in Industrial Medicine.—In the field of industrial medicine new knowledge is being acquired and reactions are taking place between it and other fundamental sciences. Thus physiology is being affected by studies of human activity in industry; the results of physiological research are being given practical application in revolutionizing the science of ventilation in factories. In another direction research into industrial work associated with exposure to heat and humidity has thrown light on the causation of heat stroke. The experimental production of cancer in animals has resulted from observing how epitheliomata occurred among those exposed

to coal-tar products, such as chimney sweeps and men manipulating pitch; the materials to which they were exposed, when applied over a long period to the tissues of animals, cause malignant growths, the study of which from their commencement is being thereby rendered possible. The discovery of the toxicity of colloidal silica, of its capacity to cause fibrosis in the body, and of its power to break down the resistance of rodents to tuberculosis, originated through noting how those exposed occupationally to the inhalation of silica dust suffered an appalling mortality from phthisis; there are possibilities in this research which may throw important light upon the whole question of tuberculosis.—Ed., *Lancet* (London), Vol. CCIV, No. 5190, February 17, 1923, p. 348.

✤

Compensation Claims in England.—During the year 1919 the following claims were made for occupational diseases:

Total cases		10,074
Compensation for nystagmus, beat hand and beat knee, taken together	(90.9%)	9,175
Dermatitis	(2.7%)	270
Lead poisoning	(2.3%)	231
All other diseases	(4.1%)	398
Accident cases under the same Act which received compensation, 1919		365,176

—K. Goadby, *Jour. State Medicine*, Vol. XXX, No. 3, March, 1922, p. 93.

✤

The Lighting of Printing Works.—The author emphasizes the value of good lighting as applied to operations in the printing trade. Probably no industry is so dependent on good lighting for successful operation as the printing industry. It was found that the general efficiency of work in a large printing plant was improved 25 per cent after illumination conditions had been thoroughly modernized. The exceptional prevalence of sight defects among compositors may be ascribed to work under inadequate lighting conditions. The paper outlines in detail the most desirable methods of lighting for the various processes in the trade.—L. Gaster, *Lancet* (London), Vol. CCIV, No. 5202, May 12, 1923, p. 986.

✤

Health of Women in Industry.—This subject was studied by the Massachusetts State Board of Health in 1907 among laundresses; by the U. S. Public Health Service in 1915 among garment workers, and also in 1916 among laundresses; by the Metropolitan Life Insurance Company in 1914-15 among school teachers; for several years by Dr. Clara F. Seippel (Chicago) among various women workers; and for the past year or more by the Public Health Service among government employees.

The *garment workers* were found to be suffering chiefly from constipation, dysmenorrhea (painful menstruation), and respiratory diseases (chiefly affections of the nose and throat). Ninety-six per cent of these women, however, were immigrants, and the conditions prevailing in the sweatshops at that time were very bad.

Laundry workers in both Cincinnati and Massachusetts cities were found to be less subject to infectious diseases than most other industrial employees; but in this investigation no account was taken of ordinary complaints.

School teachers in New York were found (disregarding influenza) to suffer chiefly from respiratory diseases (more than half of them tonsilitis); from nervous disorders; and in less degree from rheumatism, diarrhea, and genital trouble (probably dysmenorrhea). Data obtained by Dr. Seippel from the medical departments of the large industrial establishments of Chicago specified headache, dysmenorrhea, and "in winter a good many colds."

The U. S. Public Health Service records name headaches, dysmenorrhea, digestive disorders, and nervous complaints in *Bureaus* in which the women were chiefly industrial workers.

Headaches, of course, mean little; they may result from eyestrain, overeating, bad ventilation, nervous strain, constipation, diseased tonsils, decayed teeth, fatigue poisoning, and a dozen other causes.

Reports of *respiratory diseases* indicate that women, and particularly young women, are more subject to colds than men. However, this is not significant, for investigations now in progress by the Public Health Service seem to indicate that the sickness rate of industrial women, as indicated by illnesses causing absence from work for one full day or longer, is probably 50 per cent greater than that of men.

Dysmenorrhea is one of the commonest complaints of working women as it probably is of all women. And yet it may not figure in the reports as heavily as it should, for

according to Seippel, many industrial medical departments fail to record cases of it in which they can relieve suffering and keep the girls at work. Dysmenorrhea that is severe enough to keep a woman at home is apparently common among office workers but is less so among factory workers. Later investigations may show that the difference is not general, but is due to special conditions in the comparatively few industries from which data have been obtained.

Constipation is a common complaint in all walks of life and may or may not be more common with working women than with others. However, one industrial cause that has to do with it is the condition of women's toilets. In some localities these fall far behind the standards prescribed by law and well enforced in most of the greater industrial states. This is especially true, says Seippel, in regard to buildings constructed for other purposes and later converted into factories. In many of these the toilets are in themselves objectionable or are so distant that women suffer for hours before visiting them and consequently in time develop highly nervous temperaments and suffer from sick headaches, constipation, and piles. The laws in regard to factories might well be extended to those city skyscrapers that allot only one toilet in the whole building to women and one on each floor to men. Yet such buildings usually house as many women (stenographers, dressmakers, milliners, hairdressers, etc.) as they do men. Many women cannot or will not take the time to go to a distant toilet and consequently wait until the lunch or quitting hours. In default of legal compulsion, possibly a suggestion to the owner of the building that additional facilities would probably greatly reduce much of the noon overcrowding, might be efficacious.—U. S. Pub. Health Serv., *Health News* (June 15, 1923).

✚

Dangers of and Treatment for CO Poisoning.—A general definition of carbon monoxide poisoning giving the characteristic symptoms of the acute case clinically and anatomically, is given. No race or nationality is immune or has any special tolerance. Both sexes are about equally susceptible. Possibly young animals and children are worse affected. Exercise, high temperature, high humidity, low atmospheric oxygen, and anything that lowers the physical fitness of man, such as illness, overwork or excesses of any kind, increase the degree of poisoning. More cases occur in the cold months of the year (coal mines, gas heaters in homes, automobile exhausts in garages). The physical and chemical properties of CO are given, its origin from carbon or carbonaceous compounds, as well as a table showing the approximate percentage of CO found in gases from various sources of poisoning, such as mine explosions, blast furnaces, gas heaters, small furnaces, etc.

The detection of CO includes the matter of odor (from associated gases—an unreliable sign); miners' safety lamps (very unreliable); detection by small animals (mice, birds—both are ordinarily more quickly affected than men); the "hoolamite" detector (activated iodine pentoxide) which gives immediate positive results in concentrations of 0.07 per cent or more in the air and can be read in less than one minute, is proving a valuable aid; and blood methods in which the authors' special rapid method for concentrations as low as 0.01 per cent in the air is suggested and for which a simple portable apparatus has now been perfected. The rate of absorption of CO by the blood in different concentrations and time is given in a table.

The physiological action of CO is primarily anoxemia or oxygen-want. There is no indicated destruction in the blood which resumes its normal function of carrying oxygen after the removal of CO from it. Secondary effects that may remain are caused by the period of oxygen deprivation. The findings on autopsy are briefly reviewed, the most characteristic being the rose red blotches over the skin, a bright red color of the blood, and of various organs. However, the colors may be dark red or violet in different persons poisoned under apparently the same exact conditions. The authors divide the symptoms into two stages, depending upon the action of the nervous system, the first being a stimulation (from the normal condition to the ending in syncope) and the second stage, a paralysis of the central nervous system beginning in syncope, extending through coma, and ending in cessation of breathing. In the first stage the authors state that men at rest have often been exposed to CO all day without noticing any marked ill-effects but on walking home or exercising have experienced severe symptoms, even to unconsciousness. Symptoms caused by various percentages of CO in the blood are shown in an interesting table.

Among sequellæ the after-effects of acute

poisoning nearly all clear up in a day or two, but there are cases where they have extended over several months, and, in a few instances, over several years. The possibility and severity of these depend upon the duration of oxygen deprivation, personal idiosyncrasy, and physical conditions before exposure. Long exposures to low concentrations give most tissue damage.

In diagnosis the only infallible test is by examining the blood for COHb. Treatment is discussed under the head of (1) prevention (good ventilation, avoidance of known exposure as much as possible, and protective equipment); and (2) emergency treatment, the point to which is to get CO out of the blood as rapidly as possible and thus relieve the oxygen-want in the tissues. Normal elimination in pure air is too slow, requiring eight to fifteen hours to reduce COHb to as low as 10 per cent of the total Hb. The two main factors accelerating this action are (1) to increase the amount of oxygen and (2) to increase the lung ventilation. Pure oxygen will remove the CO about four times as fast as normal air, while a mixture of 5 per cent CO_2 in oxygen will increase lung ventilation and remove the CO five to six times as fast as normal air. While pure oxygen may be given by an improvised apparatus or sprayed directly over the patient's face, a perfected inhaler is to be preferred. (See the Henderson-Haggard Inhalator described in these pages in the May issue, 1923.) In brief, the steps are: (1) remove the victim to fresh air; (2) use the Schaefer prone pressure method of artificial respiration if breathing has stopped or is weak; (3) administer pure oxygen or oxygen plus 5 per cent CO_2 as soon as possible, and for twenty minutes or more; (4) aid the circulation over the period of low vitality by external applications rather than by hypodermic stimulants; (5) keep patient at rest, lying down, to avoid strain on the heart, and give plenty of time for convalescence; and (6) treat the after-effects symptomatically. All industries in which CO poisoning may exist should provide special inhalers for these treatments, and have same placed at convenient points.—Sayers and Yant, *U. S. Bureau of Mines*, Serial No. 2476, May, 1923.

✚

Manufactured Gas in the Home.—Manufactured gas is now used by more than 9,000,000 domestic consumers in over 4,600 towns and serves about 46,000,000 of our population. The earliest U. S. Geological Survey data are for 1898 since which time the growth has been continuous and very rapid since 1915. Its use for hot-water heaters in the future will be much larger. Natural gas has slowed down the use of manufactured gas in some states, but the available supply of this will be less each year. Many of the appliances now in use for natural gas are so crude and grossly inefficient that they cannot be used at all with manufactured gas and this will make a marked demand for better manufactured apparatus.

The effect of home economics teaching is an increasing use of gas for all domestic purposes. The economics of this is shown in the matter of the small part which the cost of gas produces in the preparation of various foods, such as meat, cereals, etc., and the relative cost of gas to other fuels, used for the same purpose. Charts and diagrams show why electricity cannot replace gas in an economic sense, while electric cooking and heating would result in a waste of coal. The present waste of gas industrially is especially dwelt upon and the reduction of the smoke nuisance through the use of gas is especially to be considered.

The second part of the bulletin takes up the correct use of manufactured gas, including regulations, the products of gas when burned, the dangerous product *carbon monoxide*, when combustion is not complete, and the fact that the products of gas cannot be destroyed. Special attention is given to the danger of using flueless gas-heating stoves and the fact that they are more dangerous than flueless cook stoves if for no other reason than that the person using the latter will be constantly moving about and more apt to increase room ventilation. Illustrations show the method of using blue-flame burners correctly, also luminous flame burners. The steps necessary for correct cooking are enumerated, the caution about the resting of ovens and burners is cited, the steps necessary for correct house heating, for correct water heating, and the fact that lighting should be from incandescent mantle lamps, only, are features fully discussed.

The third part of the bulletin discusses the economic aspects of the industry. The whole bulletin is replete with charts, figures, and diagrams.—Samuel S. Wyer, Bulletin 102, Part 8, *Smithsonian Institution*, procurable from the Superintendent of Documents, Washington, D. C. Price, 10 cents.

CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Indices of Nutrition.—The demand for an adequate index of physical fitness is so widespread and the need for it so obvious that attempts are being made to establish some sort of uniformity in the various indices already in use. The present paper is a report of a comparative study of the more widely known methods of assessing physical fitness, and is an attempt to make such a comparison from the point of view of actual results of applying different indices to a single group of children. The procedure was as follows: (1) To select from studies made by officers of the United States Public Health Service a group of children who, upon a detailed physical examination by experienced physicians, were found to be without defect or evidence of disease; (2) to apply each of three well-known indices to the individuals within this group; and (3) to compare the results of the application of the three indices, in order to ascertain how far they agree. Only such children were selected whose nutrition, on the basis of clinical evidence, was classified as "good" or "excellent."

The three standards selected for examination and comparison were those devised, respectively, by Thomas D. Wood, Georges Dreyer, and Clemens Pirquet. It was found that, according to the Wood standard, 20 per cent of these children in good health were more than 10 per cent underweight; according to Dreyer's standard, 13 per cent were more than 10 per cent underweight; and according to Pirquet's method, 17 per cent were underweight according to the pelidisi standard.

These children were selected as the best specimens of health that could be found among school children. In spite of this fact, one-fifth of them were underweight according to the standard most frequently used in school health work in the United States.—*Public Health Reports*, Vol. XXXVIII, No. 23, June 8, 1923, pp. 1239-1270.

✤

Baby Competitions.—Several baby competitions have been immediately followed by a drop in attendance at the centers where these have been held. The reason for this is that the award of prizes pleases the winners and offends all the others, and it may be pointed out here that it is impossible accurately to assess the merit of the mother by the condition of her child, for the circumstances of the competitors may be widely different. The babies do not all start from "scratch." The mothers are differently handicapped, and the judges do not know the mothers' handicap.—Dr. J. R. Kaye, C.M.O., *Medical Officer*, London, May 26, 1923.

✤

Birth Registration.—The Pennsylvania Department of Health is required by statute to notify the parents whenever a child's birth is registered. Parents are provided by this measure with a certificate for use as evidence of the child's age. It also is instrumental in correcting any errors that may have been made by careless physicians and midwives in filling out the certificate of birth, and serves as a check on those who are required by law but neglect to make report.—*Pennsylvania's Children, Philadelphia*, May 17, 1923.

✤

Sudden Death in Diphtheria.—Because of the fact that sudden death in diphtheria may result from slight exertion and further because on one occasion in a patient suffering from marked general vascular paresis sudden death followed shortly after the administration of castor oil, it seems as if the vagus is implicated. An attempt was made, therefore, to study the influence of vagus stimulation to determine, if possible, whether some of the sudden deaths in diphtheria might be prevented by forewarning. Ocular pressure was the method of reflex stimulation adopted.

In all 148 cases were studied, 26 of whom had the primary observation during the actual intoxication, which was arbitrarily set at 48 hours. As a result of these studies, it appears that (1) orbital pressure causes slowing of the heart by reflex stimulation through the vagus, (2) in severe diphtheria intoxication the heart is frequently refractory to vagus inhibition, (3) failure of the heart to respond by slowing, on stimulation through the vagus, as by orbital pressure, indicates either a refractory heart muscle or such an intoxication of the sympathetic that the vagus is already unopposed. Such patients are subject to sudden death.—Jesse G. M. Bullowa, M.D. *Archives of Pediatrics*, May, 1923.

Smoke Abatement and Child Welfare.—A deputation consisting of representatives of no less than eleven organizations devoted to health and social welfare submitted to the British Minister of Health their plans with regard to the effect of an undue amount of smoke on the child life of the country. Recent discoveries as to the therapeutic effect of sunlight render it all the more necessary to do away with the obscuring pall of smoke. Though the education of the mother lessens the amount of disease and death due to wrong feeding, no amount of instruction to the mother can defend her against the evils of smoke. There is no doubt that the cutting off of sunlight lessens resistance to tuberculosis and respiratory diseases. The death rate from respiratory diseases was higher in smoky towns, such as Manchester and Sheffield, than in nonsmoky towns like Portsmouth and Dover. In Leeds, after 6 days of fog, the infant mortality rate increased from 50 to 175 per thousand. To restore the sunlight to our cities was the next great task of Public Health authorities and was no less important than was the giving of pure water two generations ago.—*Medical Officer*, May 26, 1923.

✤

Emigration of Minors from Italy.—The Ministerial Decree of February 14, 1911, dealing with the emigration of minors is in part as follows:

ARTICLE 1. No passport, or labour certificate such as is provided for by Article 4 of the above-mentioned regulation, shall be issued for a foreign country to any person who has not turned twelve, intending to emigrate, unless such person is accompanied by a parent or guardian, or proceeding abroad to join such parent or guardian.

In the latter case, the person must be put under the care, during the voyage, of some one of proved respectability, who will give a written promise to look after the aforesaid person and accompany such person to his or her destination.

ARTICLE 4. All agents of the Royal Government shall prevent any minor from proceeding to a foreign country to settle there if such minor is not provided with the passport and labour certificate required; otherwise the agents of the Royal Government shall compel such to return to his or her native commune.—No. 40, *Supplement to the International Record of Child Welfare Work*, April 30, 1923.

Congenital Syphilis.—By congenital syphilis is meant infection of the embryo by the Spirochaeta pallida up to and including birth. The term "congenital syphilis" is preferred to "hereditary syphilis." Heredity implies some quality of the germ or sperm-plasm which becomes manifest as the embryo develops. There is no evidence that this condition is produced except by the fortuitous introduction of living spirochaetes into the embryo while in utero or during child birth. The likelihood of paternal infection is dismissed because the Spirochaeta pallida in the spirillar stage is too large to be contained in the head of the spermatozoön, and even if there be a spore stage of the organism it is difficult to believe that it could be contained in the sperm cell without causing its death; that the blood of the mothers of definitely syphilitic children, examined soon after birth and up to the sixth month, gives a positive reaction in 95 per cent; and, finally, because of the fact that a woman may have syphilitic children by a first husband, and apparently healthy children by a second, is of no value as evidence of paternal syphilis in the absence of serological tests of mother and infants.

The results of infection vary with the date at which the organism invades the embryo. When attacked early it will early succumb. Syphilis is the cause of from 15 to 20 per cent of all miscarriages and stillbirths. The later the infection the better chance the embryo has of surviving.

The prevention of congenital syphilis resolves itself into (1) prevention of infection of the mother, and (2) adequate treatment of the syphilized woman before or during pregnancy. The prevention of infection of the mother comprises measures moral or medical which prevent the spread of syphilis.

Adequate treatment of the syphilized woman before or during pregnancy is surrounded by difficulties at the outset. Many women suffer from syphilis without knowledge of the fact. There may be a complete absence of secondary manifestations and yet she may have a series of miscarriages or stillbirths, or bear living children who later present evidences of syphilis. The blood of such a woman will in 19 cases out of 20 give a positive Wassermann. A great deal of congenital syphilis can be prevented by examining the blood of every woman who has had a miscarriage or stillbirth and carrying out antisyphilitic treatment in cases with positive Wassermann. This treat-

ment should be continued during subsequent pregnancies because instances are on record where a healthy child has been born as a result of treatment during one pregnancy followed by the birth of an infected child born owing to reliance placed on treatment during the previous pregnancy.

The author sounds a note of warning in connection with routine Wassermann tests of all women attending prenatal clinics. Cases have been met with positive Wassermann in which there was undoubtedly no syphilis. In fact, Fordyce and Rosen state that from 25 to 35 per cent referred to the Vanderbilt Clinic by maternity hospitals because of a strongly positive reaction with cholesterinized antigen have a negative reaction with all methods when they report several weeks after delivery, and remain negative after repeated examinations. The author advises against anti-syphilitic treatment of pregnant women who give a positive Wassermann without any history of miscarriages, stillbirths, or syphilitic children, if there is no other evidence pointing to syphilitic infection.

Every infant born to a syphilitic parent should be given a Wassermann test at regular intervals up to the second year. Routine Wassermann on children of syphilitic parents have disclosed a large number of cases in which the disease was latent and unrecognized.—J. H. Sequeira, M.D., *Lancet*, London, May 5, 1923.

✚

Pirquet Feeding System.—The author has very skillfully given a criticism of the Pirquet feeding system which is satisfactory from both the scientific and common sense points of view. He takes up in turn and analyzes each of the characteristic features and underlying principles of the system.

The sitting height, upon which most of the Pirquet methods are based, Faber regards as a "dangerously inaccurate measure." Pirquet states that the error in this measurement may amount to 1 cm., but others (Faber and Gray) have found that this error may be as much as 5 cm., due to the fact that the child sits on the posterior thigh muscles which may be either contracted or relaxed. Since this error leads to important differences in the calculations based upon it, Faber thinks it could be advantageously supplanted by the stem length of Dreyer. The author states that the value of the pelidisi nutrition index cannot be fairly or finally estimated at this time, but points out the disadvantage of a table which makes 94 the normal or average instead of 100. This explains why so many children are classed as undernourished by this standard. Another objection to the pelidisi is that it cannot be readily translated into terms of percentage of normal weight, which is the common sense interpretation of a nutritional index.

The relation between sitting height and intestinal area is shown to have scarcely any scientific validity, as well as that between intestinal area and food requirements. It is acknowledged that Pirquet's feeding method does give an approximate measure of the individual food requirements, which is probably due to the fact that there is a general trend toward correspondence between the square of the sitting height and body surface, a commonly used measure of food requirements. This correspondence makes the sitting height an appropriate measure of body surface in about 90 per cent of cases. Faber thinks it is reasonable to attribute to this fact such success as the Pirquet feeding system has attained.

He sees no reason why the "nem," a new unit of food value, should be even proposed in this country. Pirquet believed it would be impossible to popularize the calory in his country where both the laity and medical profession were largely unfamiliar with the term and its meaning. In this country where the calory is generally understood and commonly used in practice, to change the unit to two-thirds of a calory (the nem) would be useless and confusing.

As an appendix to the discussion of methods based on sitting height, Faber shows figures which he believes indicate that height-weight standards are more reliable than sitting height standards. He thinks this may be true of stem length, and further studies of this measure are desirable.—Harold K. Faber, M.D., *Am. Jour. Diseases of Children*, May, 1923.

✚

The Wassermann Test During Pregnancy.—Among approximately 5000 routine maternity cases admitted to the Robinson Memorial, Massachusetts Homeopathic Hospital, Boston, during the period between 1917 and 1920, 461, or 8.2 per cent, showed a positive Wassermann reaction. Of this number 391, or 7.8 per cent, gave a definitely strong reaction, and 231, or 4.2 per cent, were strongly positive.

In order to show the effect upon the children by comparing positive to similarly collected negative series of cases of same nationalities, the cases are classified in a manner to show certain differences between clinical and serological syphilis as follows:

Clinical Syphilis	Negative	Reportable Positives 2 to 4-plus	Strong Positives 4-plus
Number cases....	500	391	231
A. Definite	0.2%	5.6%	9.1%
B. Suspicious ...	0.4%	2.8%	3.4%
C. Suggestive ...	1.0%	7.4%	9.1%
D. No indication.	98.4%	84.2%	78.4%

As a result of a comprehensive statistical analysis of these cases the author arrives at the following conclusions:

1. In routine obstetrical examinations comparatively few women with positive Wassermann tests show clinical signs of syphilis.

2. Syphilis is an appreciable factor in the causation of fetal deaths, directly or indirectly producing from 30 to 40 per cent.

3. Syphilis has a similar effect upon the mortality of children during the first years of life.

4. The offspring are more seriously affected when syphilis in the mother is clinically evident and when the reaction is a strong rather than a weak positive.

5. A positive Wassermann test in the absence of clinical findings, especially if repeatedly positive, should not be disregarded.

6. With cholesterolized antigens, positive reactions in pregnant women may be obtained in nonsyphilitics.

7. Untreated mothers with histories of clinical syphilis and positive Wassermann tests may produce as high as 60 per cent of children apparently healthy during the first four years of life.—David L. Belding, M.D., *Boston Medical and Surgical Journal*, May 3, 1923.

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HEALTH EDUCATION AND PUBLICITY

E. G. ROUTZAHN

Widespread Distribution of Health Printed Matter.—"Early in May the National Tuberculosis Association made arrangements with the Newspaper Information Service in Washington, D. C., to distribute its pamphlet entitled 'What You Should Know About Tuberculosis.' The Newspaper Information Service published in a series of papers, to which it syndicates material, a few paragraphs about the pamphlet. Several thousand copies of the pamphlet have been requested by newspaper readers in consequence."—*Monthly Digest of National Health Council*, June, 1923.

This method of distribution is also available through the Frederick J. Haskins Syndicate, Washington, D. C., with sometimes as many as 50,000 to 100,000 copies being disposed of to readers of newspapers. In every case the individual requests the pamphlet and sends a two-cent stamp to pay postage. Any agency desirous of a general distribution of a pamphlet is encouraged to write to Haskin or to the Information Service in Washington. You should offer a pamphlet, not a mere leaflet. Naturally the demand will depend largely upon the title and the subject matter.

"What Books Shall I Read?"—This ever recurring question in the mail of state and national health agencies is answered in "A Selected Bibliography of Books on Public Health," a tentative list compiled by James A. Tobey and issued by the National Health Council. "Through arrangement with the American Public Health Association this bibliography succeeds the list of 600 titles issued by that association" in 1922. "It is hoped that it will prove useful to sanitarians, libraries and the general public." The books are listed under the following headings: Administration and General Public Health, Cancer, Child and Maternal Hygiene, Communicable Diseases, Foods and Nutrition, Health Education, Industrial Hygiene, Laboratories, Mental Hygiene, Personal Hygiene, Public Health Nursing, Sanitary Engineering, School Hygiene, Social Hygiene, and Tuberculosis.

✚

For the Mothers of Tiny Tads.—Now that the well known "pre-school" child is getting his innings it is of interest to report an attractively made up booklet for his mother. "A Message to the Mothers of

"Tiny Tads," which tells "About Health, Habits, Happiness and Other Things" comes from the Public Health Federation, Bleecker Marquette, executive secretary, 25 East 9th street, Cincinnati. It contains a happily illustrated cover page and 22 pages of text. An excellent feature is the simplicity of the wording. "Don't expect your child's stomach to work any time and all time." "Most of us hanker for things that are not good for us, children especially." "Fried foods are bad for children—frying makes the outside surface difficult to digest." A few hard words have crept in: "surveillance" comes in the first paragraph; "communicable" which, even though it is explained, is too big a mouthful, and "query," an unaccustomed word.

Mr. Marquette explains that they "have worked out a plan whereby all of our social case workers who visit in the homes will take this pamphlet to mothers of pre-school age children and will give to each of them a personal word and a card entitling the child to a free health examination at one of our clinics, in the event that the family is not able to pay a private physician. Instead of having a speaker explain the plan to the workers, how it would work and how to get the message over, we had a little playlet worked up and presented at a meeting in which the whole process was acted out, including the actual examination of the children."

✤

"Health Training in Schools."—This is the title of a handbook "based on the *practice* of hygiene" which will be published by the National Tuberculosis Association about the time this mention appears. "In order to make the handbook a contribution of great value to the schools and through them, to public health, the Association has sought the most authoritative advice and the latest thought of demonstrated value both in pedagogy and in hygiene. Diligent study was made of handbooks already in use and of recent books on health and its pedagogy. Authorities were personally consulted. Data were compiled on courses of study in large cities and small cities, in consolidated and rural schools." A fuller notice will appear in a future issue of the JOURNAL.

✤

"Monthly Digest" to Become a Printed Bulletin.—One of the valuable services of the National Health Council has been the publication of the *Monthly Digest*, a mimeographed bulletin giving detailed news of the personnel, activities and publications of the organizations associated with the Council, and some others as well. The *Digest* has contained advance dates of health, medical and kindred association meetings, and a select list of current periodical references to public health. Future issues will be printed and the subscription price reduced to something between fifty cents and a dollar.

✤

New Social Hygiene Exhibit.—A new scientific exhibit, first shown at the American Medical Association meeting in San Francisco, has been prepared by the Advisory Committee for Medical Research on Venereal Diseases of the American Social Hygiene Association.

✤

First Aid for Health Talkers.—The Health Speaker's Handbook, a pamphlet by Iago Galdston, M.D., has been issued by the New York Tuberculosis Association. The author in his introduction explains the purpose as follows:

"This brief manual on health education from the lecture platform sets forth the writer's crystallized experiences, gained in service. Each of the ideas here presented has been subjected to the critical test of practical application; and while a good deal has been said concerning the social function of public-health education, most of the data deal rather with problems of substance and presentation than with theory."

The pamphlet contains an argument in favor of the spoken word as an effective method of health education and touches on many practical problems involved in preparing and delivering health talks. Numerous detailed suggestions are given, such as practical methods for the effective use of slides, dangers to avoid in utilizing illustrative material of various types, what the chairman should know and what he should do for the meeting. It contains outlines of talks which have been delivered before various types of audiences such as Printers' Apprentice Union, physicians and mothers. Every agency doing popular health educational work will wish to secure a copy.

✤

What Does Health Look Like?—What's your idea of a suitable symbol of a healthy Father Toledo and his group of healthy, happy children?

The Toledo Public Health Association, 401 Produce Exchange Building, is anxious to

have an appropriate symbol of the health it is going to wish upon the citizens of Toledo. Toward this purpose the health association is offering a $5 prize for the best design.

News-Bee Cartoonist Grey, at the suggestion of Dr. H. S. Kleinschmidt, executive secretary, drew the accompanying picture. It's a cartoon of Father Toledo, a fine specimen of mellow longevity, who is really as young as he feels.

Father Toledo tries to conceal his youth with spectacles and a gray pigtail. But there's youth in his blood. And he's full of vim and vigor.

Cartoonist Grey might have drawn a picture of Father Toledo desperately dodging a brick labeled *Disease*, but the health association wants to emphasize health, not disease.

"Health," says Dr. Kleinschmidt, "is more contagious than disease. Of course, health presupposes freedom from disease. Therefore, we strive first to teach the rules of disease prevention and encourage every measure which protects life and health.

"But that's only half of the story. The other half (or maybe it's nine-tenths) consists in health promotion, in increasing the efficiency of the human body and spirit to its full capacity.

"A design which will convey this idea at a glance and identify the Toledo Public Health Association in the minds of Toledoans every time it is displayed is what we want."

The association isn't satisfied with this design. It hopes that some reader of *The News-Bee* will suggest something better. Try it! Not a drawing necessarily, but at least an idea.—*Toledo News-Bee.*

The JOURNAL would like to reproduce a page of symbols used by health agencies—local, state or national. Please send a copy of yours.

✦

Car Cards Tell How to Keep Well.—A series of typographically well done car cards have been issued by the New York Tuberculosis Association, 10 East 39th Street, New York. The well-balanced layout, the wise choice of letter, and the simple, direct statements received commendation in the Printed

Tuberculosis

can be *prevented* — can be *cured*

Have your Doctor examine you at least once a year

TAKE SOME REST

Get plenty of SLEEP. Rest a few minutes before and after each meal. Don't hurry. Don't worry.

Ask us for helpful information, without charge.
New York Tuberculosis Association, Inc., 10 East 39th St.

Matter Clinic of the Committee of Publicity Workers at the National Conference of Social Work. The inclusion of a second message—"Have your doctor examine you at least once a year"—on each of the series was criticized. The attempt to carry two ideas is placing too heavy a burden upon the car card. In the sample shown on this page the "double cross" is in red, and also the words "Take Some Rest" and "Can be prevented—can be cured." The use of red for the words was objected to as breaking the continuity of the idea "Tuberculosis can be prevented—can be cured." The messages of the several cards are as follows:

Take Some Rest: Get plenty of SLEEP. Rest a few minutes before and after each meal. Don't hurry. Don't worry.

Dress Suitably: "Suitably" means right for the SEASON. Keep yourself comfortable. Don't take chances.

Keep Clean: Take warm baths, often, with soap. Brush your teeth twice a day. Keep your house clean, too.

Breathe Fresh Air: Keep windows open. Ventilate. Don't be afraid of NIGHT air. It won't hurt you. It's GOOD.

Announcement of the Section on Publicity and Public Health Education, Concerning the Printed Matter Clinic — Boston, 1923.

To Those Interested:

The Printed Matter Clinic inaugurated at the Cleveland meeting of the A. P. H. A. will be repeated at Boston. Printed matter submitted by public or private health agencies will be discussed in such a way that the suggestions may be utilized in getting out new pieces of printed matter.

The Boston clinic will cover single sheet or folded circulars, booklets, pamphlets, posters and car cards. The committee particularly urges the submission of popular publications on the Schick test and diphtheria prevention, the prevention of colds and pneumonia. The discussion by specialists will cover copy, title page, paper, color, typography and illustration.

You are requested to send two copies each of the specimens you wish to have discussed, together with the following information regarding each of these pieces of printed matter:

1. Purpose or object, and (or) the audience or type of people to be reached.
2. Where distributed or how used.
3. Approximate date of printing.
4. Quantity printed.
5. TOTAL COST (or separate items, covering preparation of copy, if any, paper, typography, illustration, printing, binding, etc.).
6. Questions you would like answered (if any) by the critics.

Mark these samples 1, 2, 3, etc., to indicate the order of choice, if all the samples cannot be accepted for the Clinic.

A committee will select the specimens to be discussed at the Clinic and two hundred and eight copies of the selected leaflets and ten copies of the posters or car cards will then be requested as a requirement before presentation at the Clinic.

Please send your replies to PHILIP S. PLATT, *Chairman*, Printed Matter Clinic, care E. G. Routzahn, 130 East 22nd Street, New York City.

PUBLIC HEALTH LEGISLATION

JAMES A. TOBEY, LL.B.

U. S. SUPREME COURT RULES ON MATERNITY AND INFANCY ACT

The two cases challenging the constitutionality of the Federal Maternity and Infancy Act which were before the United States Supreme Court for decision were dismissed by that court on June 4, 1923. As we have previously explained, one of these cases was brought directly before the U. S. Supreme Court by the Commonwealth of Massachusetts and the other was begun in the courts of the District of Columbia by a resident of Massachusetts, suing as a taxpayer. In this latter suit, the act was upheld by the Supreme Court of Appeals of the District of Columbia and then appealed to the U. S. Supreme Court. The Federal Maternity Act has been so often outlined in these columns and elsewhere that we presume our readers are familiar with its terms.

The opinion of the U. S. Supreme Court was delivered by Mr. Justice Sutherland and there are no dissenting opinions. The court dismisses the cases because of lack of jurisdiction and does not attempt to decide the constitutional questions involved. It is a principle of law that a court can decide a legal controversy only when a case has been properly brought before it by competent parties whose rights are infringed. The court here states that Massachusetts presented no justifiable controversy either in its own behalf or as representative of its citizens. The powers of the state have not been invaded, for the maternity act imposed no obligation but simply extended an option which the state is free to accept or reject. There is no question of yielding up anything, the only burden imposed being that of taxation, which falls upon the inhabitants who are within the taxing power of Congress, as well as that of the states in which they reside. If Congress enacted this law with the ulterior purpose of tempting the states to yield, that purpose can be effectively frustrated by not yielding. The court says that the whole question is a political one and not judicial in character, and cites several authorities on this point. It is further not the duty or right of the state to institute judicial proceedings to protect its citizens from the statutes of the United States of which they are also citizens.

The question of taxation is stated to be one of public interest and not of individual concern where the Federal Government is involved. The court calls attention to the fact that there is no precedent for bringing a suit such as that of Mrs. Frothingham as a taxpayer against the Maternity Act and so for these reasons refuses to entertain it. In conclusion, the court states that a person who would invoke judicial settlement must show an injury and that neither of the plaintiffs in this case has done so.

The result of this case is not to uphold the maternity act *per se* but only to decide that neither Massachusetts nor Mrs. Frothingham had a right to attack it. The constitutionality of the law has yet to be determined and that will only be decided when a case reaches the U. S. Supreme Court in which there is an alleged injury under the direct operation of the act.

OTHER COURT DECISIONS ON HEALTH

The quarantine of venereally infected persons in accordance with regulations adopted by the public health council of the State Department of Health has been upheld by the Supreme Court of Ohio as within the police power of the state. Ex parte Company and ex parte Irvin, 139 N. E. 204.

The adjudication by a board of health that a public nuisance exists is not conclusive unless the defendant is granted an opportunity of being heard, according to the Supreme Court of New Jersey. The nuisance in this case was failure to connect with a sewer. Board of Health of Oaklyn v. Rulofson, 120 Atl. 328.

Food purveyors must of necessity be insurers against injury occasioned by their failure to furnish pure and wholesome food, says the Missouri Court of Appeals. Smith v. Carlos, 247 S. W. 468.

Typhoid fever contracted by a hotel employee as a result of drinking impure well water furnished by the hotel has been held compensable as an accident within the meaning of the workmen's compensation act by the Supreme Court of Michigan. Frankamp v. Fordney Hotel et al., 193 N. W. 204.

HEALTH LAW AT NATIONAL CONFERENCE OF SOCIAL WORK

During the National Conference of Social Work held in Washington in May, one day was devoted to law and social work and one of the sections took up the subject of the legal aspects of health. For one who is directly interested in the legal principles of public health, this session was rather disappointing. Three papers were read, two of which dealt entirely with the development of public health administration and hardly touched on the legal phase at all. These papers were very interesting and brilliant expositions of the subject as are all papers written by the two authors, Dr. Eugene R. Kelley and Dr. W. H. Brown. But they did not tell much about law. The law paper was read by President F. J. Goodnow of Johns Hopkins, who is an eminent constitutional lawyer. He described the fundamental legal principles and took them up from the standpoint of the federal government and the states. He showed how the United States by virtue of its power to govern its territories; to regulate commerce; to levy taxes; and to make treaties; had, indirectly, jurisdiction over national health matters. He called attention to the fact that in the states all public health must find its origin in the statutes of legislative authority and that absolute discretion could not be vested or delegated to health authorities. While the principles which are to be followed must be laid down at least broadly by the legislature, some powers are, of course, given over for ministerial action, but these are narrowly construed where their tendency is to infringe upon individual rights.

Unfortunately, there was no discussion of any of these three papers. The whole subject of the relationship of law and public health is an extremely important one, and one which in our opinion has never been adequately outlined and described. It is a subject which we have under consideration for future discussion in these columns.

NEW YORK STATE SANITARY OFFICER'S ASSOCIATION

The New York State Sanitary Officers' Association held its twenty-second annual conference from June 26-28 at Saratoga Springs. The public-health nurses of the State of New York met with the sanitary officers as they have in past years. Over 100 persons were registered for the conference.

Dr. Stanton B. Hull of Petersburg was reelected president. Dr. Leonard of Cambridge was elected secretary, and Dr. Metz treasurer. The president announced a forthcoming publication of a directory of sanitary officers and public-health nurses of the state.

The convention was very sorrowfully and dramatically terminated in the middle of the last session Thursday morning, when Dr. Nicoll interrupted Dr. Bristol and announced the death of Dr. H. M. Biggs, and moved at the same time that the meeting be adjourned, which it was. (Notice of Dr. Biggs' death appears on page 671 of this issue of the JOURNAL.)

Many interesting papers were given by men well known in public-health circles, some of which will appear in the *New York State Health News* issued by the State Department of Health. Extracts of papers by the department are herewith presented:

Professor C.-E. A. Winslow of the Yale Medical School spoke on "The Health Officer of To-morrow." He emphasized the new opportunities and the new responsibilities which are opening before the health administrator of the future, opportunities and responsibilities which have relegated to a subordinate place the routine sanitary inspection and the perfunctory isolation of communicable disease which made up the great bulk of the health officer's duties in the past. "The health officer of to-morrow," declared Professor Winslow, "must visualize as his objective the prevention of every form of preventable disease and the promotion in every possible way of maximum standards of physical health and efficiency. He must be a recognized leader of the local medical profession working out in friendly coöperation those complex questions which are involved in the relations between preventive and curative medicine and he must be a leader in his community capable of inspiring every

citizen with a realization of the splendid possibilities of the public health movement of the present day."

Dr. Allen W. Freeman, Professor of Hygiene and Public Health in the Johns Hopkins School of Hygiene and Public Health, in an address on "Health Administration in Rural Districts" urged the importance of appointing full-time health officers on a county basis. In his opinion the ideal way to bring this about is a permissive state law leaving it optional for counties to come into the system but offering grants in aid from state funds to those counties which adopt the plan of a full-time health officer. "The question of all questions in regard to the county health officer," continued Dr. Freeman, "is how to keep the office out of politics. Once the office becomes a question of political patronage all hope of permanent constructive work is gone. The comparative success of our colleagues in England in keeping politics out of public health depends on the rigidly specified conditions under which a license or diploma in public health may be procured. If we can devise a licensing system whereby an intending health officer before appointment, must pass a rigid examination by an impartial authority, we can lessen greatly the pressure of politics. Nine times out of ten when a health officer is displaced for political reasons it is because the appointing authority cannot resist the pressure to appoint some one else to the position. If appointment were limited to those properly qualified this pressure would be much reduced or entirely absent. The traditional civil service requirement does not meet the need because the test is applied by a non-technical agency and the examinations are not sufficiently severe. It has seemed to me that it might be possible for the U. S. Public Health Service, given the necessary authority by Congress, to institute a system of examining and licensing health officers issuing perhaps a National Diploma in Public Health. In this way the qualifications specified by statute might be made to mean something more than they do at present."

Dr. Freeman reported that taking the United States as a whole there are now 231 counties in 33 states which have whole-time health officers and these officials serve 11.6 per cent of the rural population of the United States. The number of counties with this type of health administration has doubled since 1920, when it was 109. On the basis of many years' experience and observation Dr. Freeman stated his belief that the whole-time county plan is the real answer to the immediate problem of health supervision of rural districts. "Its service is tangible and valuable, its cost is not excessive and it commends itself to the judgment of those who support it and live under its service."

Even with ideal health administration, however, Dr. Freeman asserted that the complete health service of the future can be rendered only when there is complete integration of the private practice of medicine with the practice of public health. "This must be brought about through an organization of all the various sorts of doctors necessary to keep the individual well, or to restore him to health when he becomes sick in spite of our efforts, on the one hand; and on the other hand we must have an organization to maintain the contact between the individual citizen and this medical organization. These functions, it seems to me, represent the true fields of activity of the physician and the health officer of the future."

Dr. Freeman, however, condemned "state medicine" as the term is often understood, namely, "a vast political machine in which all physicians are employed by the state and in which the individual citizen receives his medical service as it is given him, without choice of physician or of method." The solution, according to Dr. Freeman, must be found somewhere "between the present haphazard, hit or miss individualistic system with its inadequacy, its inefficiency and its waste on the one hand and the so-called state medicine on the other." It is the task of the health official in Dr. Freeman's belief to find the middle path and the right solution, and certain tendencies already indicate the general direction this solution will take.

"It seems probable that for rural areas at least the medical health service of the future will center about the county hospital. Such a hospital, with a whole time staff on a salary basis, with its attached out-clinics will be the chief source of medical service. To it will come all the seriously sick of the county, all

maternity cases, all obscure chronic complaints, for diagnosis by every available means and for treatment, the best that can be had. Out from the hospital will go the visiting nurses, covering the whole county, doing what we know as public health nursing as well as ordinary visiting nursing, if there is any distinction between the two. The private practitioners of the county will be mainly concerned with the health supervision of their patients. They will probably be paid on an annual fee basis and will have approximately one thousand patients each. Everyone will be under constant supervision. There will be no need of much of what we ordinarily call health work. It will be the routine, normal activity of the whole medical service. The medical director of the county will be in charge of the whole organization, under a board of trustees. The whole will be supported in part from state and local funds but largely from the payments of patients. The savings in medical and surgical fees which would result from having a single consulting physician and a single surgeon, kept constantly busy with an even flow of material, instead of having several practicing over a large area and spending most of their time going to and fro as at present, would be great."

Dr. Bernard L. Wyatt, director of the health service of the Laurentide Company, Grand' Mère, Quebec, discussed the principles of health supervision in industry and emphasizes particularly the importance of the preventive aspect of industrial medical service.

"As some states began to make certain occupational diseases compensable and as a few industrial leaders commenced to give more serious attention to the supervision of the health of their workers, it was found that if a health service were prepared to discover incipient disease, advance plant sanitation, promote personal hygiene, etc., it would produce greater returns than if it were developed along purely curative lines. In other words, it has been demonstrated during the past few years that the most fundamental health problems in industry do not belong to the realm of therapy or surgery. Statistics show that approximately 2½ per cent of all wage earners are constantly incapacitated on account of illness, and some 25,000 fatal industrial accidents occur annually. In addition to the tremendous number of fatalities in industry, it has been estimated by the United States Bureau of Labor Statistics that there are every year at least 700,000 accidents, each of which causes an incapacity of more than four weeks. The fundamental consideration from the standpoint of the subject under discussion is that 70 per cent of all of this waste from accidents and disease is practically preventive. The practice of medicine, up to a very few years ago, was limited to the art of healing, but it is a reasonable assumption that the recognition of the inseparability of good health and efficiency in industry will be a big factor in the future development of its preventive side. Theodore Roosevelt once said that 'the conservation of our national resources is only preliminary to the larger question of national efficiency.' He was referring to the question of material resources at the time, but the conservation of our human resources is of even greater importance, and when this principle is applied to the vast group of industrial workers, it is found that the proverbial ounce of prevention is worth a pound of cure."

The principles upon which sound industrial supervision should rest, according to Dr. Wyatt, are six in number. Health service, if it is to be a stable and permanent factor in an industrial establishment should (1) be exactly as it is represented, (2) should embody the spirit of service, (3) should be developed as the expanding consciousness of the workers enables them to appreciate its benefits, (4) should include preventive as well as curative measures, (5) should take into consideration home and community conditions, and (6) should produce results that will justify the operating overhead.

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MEETING OF EASTERN NEW YORK PUBLIC HEALTH ASSOCIATION

During the Annual Conference of Sanitary Officers and Public Health Nurses of New York State, the Fifth Annual Meeting of the Eastern New York Public Health Association was held, and diplomas were presented to the eleven graduates of the course in infectious diseases and public health given at the Albany Medical College in coöperation with the State Department of Health.

This course is conducted by Dr. Charles C. Duryee, Sanitary Supervisor of the State Health Department.

After presentation of the diplomas, the new graduates were elected into the Association,

which is composed of former graduates of this course, and Dr. Ordway, Dean of the Albany Medical College, gave a talk on Medical Education, pointing out the need for medical universities as well as for the Medical-Hospital School.

At the close of Dr. Ordway's address, the Association elected the following as its officers:

Dr. J. W. Wilson, Albany, President; Dr. D. J. Hannan, Troy, Vice-President; Dr. W. G. Keens, Albany, Secretary and Treasurer. Dr. Duryee was reëlected as Honorary President.

The retiring President, in his address to the Health Officers in New York State, touched on the question of the shortage of physicians in rural areas, and the problem of the physician in connection with the State Narcotic Law. He pointed out that there is an ample supply of physicians in all parts of the state during the summer months and that, if the roads were kept open in the winter, all calls could be made by the country physician.

STATE HEALTH NOTES

General

Dr. LeRoy K. Wilkes, who, as first full-time medical director of the Trenton, N. J., public schools, carried through a plan of health teaching in the classroom which enlisted the interest and support of the entire community and attracted nation-wide attention among educational and health authorities as well, has transferred his activities to a national field. He has been appointed an Associate Director of Medical Service of the American Child Health Association, which is working for the improvement of methods and standards of child health care throughout the country. Dr. Wilkes assumed his new duties in June.

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Illinois

A field physician of the state department of public health recently succeeded in persuading a newly elected mayor of a down-state municipality to recall a chiropractor who had been appointed on the local board of health. Two physicians who had been appointed on the same board declined to serve with the chiropractor. The state department of public health took the position that it neither had nor sought to secure the power or privilege of dictating the color of local boards of health but that it looked with distinct ill favor upon the official participation of chiropractors in public health matters and that in case of untoward communicable disease development under the administration of chiropractice boards of health the department would be prompt in exercising its legal power to take charge of the situation at local expense.

Legislative action in reducing the appropriation for district health superintendents from $200,000 to $60,000 for the biennium has seriously crippled the medical field staff of the department. Six or seven field physicians are all that can be retained from the organization of twenty.

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The General Assembly declined to accept federal aid funds available to Illinois under the Sheppard-Towner Act. This made it necessary for the State Treasurer and Director of Public Health to return to Washington a check for something over $19,000 which had lain in the treasurer's office for several months awaiting legislative action. It means also that about $50,000 will be declined annually for maternity and infant hygiene service.

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A bill providing for the acceptance of federal aid in social hygiene service failed to pass the legislature. About $15,000 annually was available. Heretofore Illinois has been coöperating with the federal government in social hygiene service. Failure to get the federal aid funds coupled with a cut of $28,100 from the last preceding appropriation limits considerably the extent of functions of the division for the current biennium.

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At a conference between state and local health officials and representatives of every Cook county community along the DesPlaines river, which was recently held in Oak Park, ways and means for carrying out a successful anti-mosquito campaign were discussed. The plan involves an organization to be known as

the DesPlaines Anti-Mosquito League which will be made up of officials and interested citizens from all the Cook county territory along the DesPlaines river. Definite plans were discussed and the war against the culex will soon be under way.

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According to the most recent statistical data given out by the State Department of Public Health the Illinois mortality from typhoid fever fell from 389 deaths in 1921 to 282 in 1922. This is the greatest annual reduction in deaths from typhoid fever that has been shown in recent years in the state and is believed to be due in large part to the prompt epidemiological service done by the district health superintendents. Definite declines took place also in the mortality rates from all other major communicable diseases with the exception of pneumonia and influenza, these two diseases having caused 2,199 more fatalities in 1922 than in the year before. Pneumonia and influenza excepted, there were 812 fewer deaths (or the difference between 9,023 and 8,211) from the principal communicable diseases in Illinois during 1922 than during 1921. Including pneumonia and influenza there were 1,387 more deaths in the state from the diseases under consideration during last year than during the year before.

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New York

Dr. F. F. Fronczak, Health Commissioner of Buffalo, is leaving for Europe to attend the Strasbourg Centennial and will also visit Poland. Dr. Fronczak will doubtless bring back to the readers of our journal many news items of interest.

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Brooklyn is to hold a Safety, Health and Sanitation Exhibition at the 106th Infantry Armory from October 20 to 27. This exhibition is being held for the purpose of reducing preventable deaths, accidents, property destruction and disease, through the application of modern protective devices and methods. Headquarters are now at 371 Fulton St., Brooklyn.

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New Jersey

Dr. J. C. Price, Director of Health of New Jersey, was welcomed by the staff of the Department on June 14, when he returned from his six weeks' vacation in Europe. He visited England, France and Switzerland and had an opportunity to visit the battle fields while on his trip.

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The Camden City Commission has had made a municipal survey. The recommendations included a reorganization of all health work and the creation of a Bureau of Health under the direction of a full-time adequately trained health officer, fully responsible for all activities of the Bureau and free from political interference. The organization of the Bureau of Health, as recommended, includes a Division of Vital Statistics and Bureaus of Preventable Diseases, Child Hygiene, Sanitation, Hospital and Laboratory. It is expected that the reorganization will be accomplished within a short time along the lines laid down in the report.

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A group of five municipalities, known as the Oranges, support jointly through the health boards a venereal disease clinic and a social service department. At the request of the clinic committee of the health officers of the Oranges, Dr. Walter M. Brunet of the American Social Hygiene Association made a survey of the facilities and needs of the municipalities. In a report of his survey Dr. Brunet recommended: the creation of general committee to keep in touch with conditions and to support the health officials; hospital facilities for venereal cases; provisions for institutional care of refractory delinquents; increased accommodations for the clinic; municipal ordinances requiring local reporting of venereal disease; and the appointment of a committee of the local medical society to consult with the health officers on medical problems.

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The State Normal School at Trenton has established a demonstration Baby Keep-Well Station in the school which serves two purposes. All prospective child hygiene nurses, before assignment to districts under the state program, are required to undergo a post-graduate course at the station in order to learn the methods and purposes of the work and the policies of the Bureau of Child Hygiene of the State Department of Health. At the same time the Normal School students learn the value of the continuous child hygiene program as well as school child nursing and inspection service.

Warren county was stirred with unusual excitement through the discovery and later, the escape of a case of smallpox. The patient was a negro who came from Virginia to work with a road construction gang. On May 9, he felt ill and asked to see a physician. A physician who happened to be passing diagnosed his case as mild smallpox, which in itself was sufficient to stir a quiet community. Unfortunately, the patient heard of the diagnosis, and promptly disappeared in the direction of Belvidere, New Jersey. A search was at once begun but failed to detect the runaway.

On Tuesday, May 10, he appeared at Carpenterville. Not suspecting the dangerous condition of the new arrival, a local company gave him work at the lime kiln. The next morning he asked for his pay but while a check was being prepared he suddenly disappeared a second time. When the local ferryman who had just taken him across the Delaware river into Pennsylvania, without a suspicion of the nature of his cargo, returned he found the town highly excited. The story of the smallpox case had just been learned, and too late it was realized that the infected man had just spent two days with them. Prompt use of the telephone by the ferryman resulted in his capture at Doyleston, Pa. All exposed persons at Hope and Carpentersville, about forty-four in all, were at once vaccinated and it is believed that no serious results will ensue.

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Pennsylvania

Dr. Witherow Morse, Professor of Physiological Chemistry in West Virginia University School of Medicine, has accepted the position of Professor of Physiological Chemistry and Toxicology in the Jefferson Medical College.

Oregon

Governor Pierce has reappointed Dr. W. B. Morse as member of the State Board of Health, and has made two new appointments, Dr. William T. Phy and Dr. C. M. Barbee.

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Virginia

A meeting for the reorganization of the Virginia Public Health Association was held at Richmond in April. The Association has a very ambitious program including demonstration schools for dairy and food inspectors, scoring of dairies, etc. The officers are: Powhatan S. Schenck, M.D., Norfolk, Va., president; Roy K. Flannagan, M.D., Richmond, Va., vice-president; W. S. Keister, M.D., Charlottesville, Va., vice-president; Lonsdale J. Roper, M.D., Portsmouth, Va., secretary-treasurer; Robert A. Martin, M.D., Petersburg, Va., assistant secretary-treasurer.

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Wisconsin

Dr. A. H. Broche, Health Commissioner of Oshkosh, Wis., has been made director of the Oshkosh State Coöperative Laboratory. William C. Sieker has resigned as health officer of Shorewood, a Milwaukee suburb, where he successfully applied an original health inspection policy typified by the slogan, "Isolate first and diagnose afterwards."

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In enacting the State Board of Health's biennial appropriation, the Wisconsin Legislature increased the grant for the Bureau of Sanitary Engineering, making possible the addition of one full-time engineer after July 1, and two assistants for summer work in matters of water supply, sewage disposal and industrial waste.

Provisions of the Sheppard-Towner Act have been accepted for Wisconsin by the Legislature, and the Federal grant of $27,751 annually becomes available by reason of the matching of Federal funds by the State, in addition to $5000 per year received unconditionally. The money will help finance definite undertakings, including the operation of the Child Welfare Special, the State Board of Health's motorized health center, and of county health centers, of which 16 have been established to date. These are activities of the Bureau of Child Welfare.

The bill repealing the compulsory feature in the smallpox vaccination law as applied to school attendance, which became one of the most bitterly contested measures in the Legislature, finally was killed in the Senate after passing the Assembly by a big majority. Bills opening hospitals to any licensed physician, regardless of existing hospital rules, on penalty of forfeiture of the hospital's tax exemption privilege, and permitting any unregistered nurse to practice in hospitals on the same footing with registered nurses, were killed. A bill to abolish the position of deputy state health officer also met defeat.

CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the cooperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

July 30-August 4, American Home Economics Association, Chicago, Ill.

August 28-31, National Medical Association, St. Louis, Mo.

September 4-14, National Women's Christian Temperance Union, Columbus, Ohio.

September 10-14, American Dental Association, Cleveland, Ohio.

September 19-21, American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa.

September 24-27, American Red Cross, Washington, D. C.

September 28-October 1, Association of Dairy and Milk Inspectors, Washington, D. C.

September, American Electro-Therapeutic Association, Providence, R. I.

September, American Roentgen Ray Society, Chicago, Ill.

October 1-3, American Association of Industrial Physicians and Surgeons, Buffalo, N. Y.

October 1-5, National Safety Council, Buffalo, N. Y.

October 4-6, Association of Military Surgeons of United States, Carlisle Barracks, Pa.

October 8-11, **American Public Health Association, Boston, Mass.**

October 15-17, American Child Health Association, Detroit, Mich.

October 17-19, American Association of Railway Surgeons, Chicago, Ill.

October 22-26, American College of Surgeons, Chicago, Ill.

October 29, American Hospital Association, Milwaukee, Wis.

October —, American Acad. of Oph. and Oto-Laryngology, Washington, D. C.

November 12-15, Southern Medical Association, Washington, D. C.

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FOREIGN MEETINGS

July 23-25, Congress on Cancer Research, Strasbourg.

June-October, **Pasteur Centennial, Strasbourg.**

September—Association internationale de pediatrie, Brussels.

VALUE OF FELLOWSHIP

The following is a clipping from the Daily Press of Pasadena, Texas, and shows that one of the objects sought in the reorganization scheme has become an accomplished fact:

"Dr. A. F. Flickwir, City Health Officer, has been appointed a fellow of the American Public Health Association. This honor is conferred on public health officers who are members of the Association and have done some distinctive public health work, it was stated."

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Kansas

A series of seventeen Child Health Conferences have been arranged by the Ottawa County Health Department for the infants and children under six years of age. The majority of these conferences will be at one-room schools in strictly rural communities, and at some of the conferences that have already been held mothers have come from as far as five or six miles. Unusual interest is being manifested throughout the county in this type of work.

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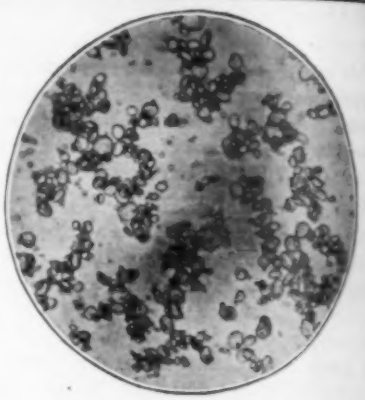

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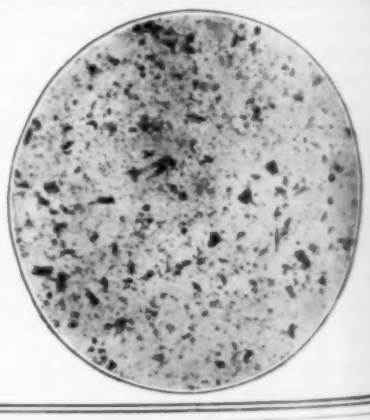
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